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United States
Department of
Agriculture

Forest Service

**Pacific
Northwest
Region**

1986

Draft Environmental Impact Statement

Proposed Land and Resource Management Plan

Wallowa–Whitman National Forest

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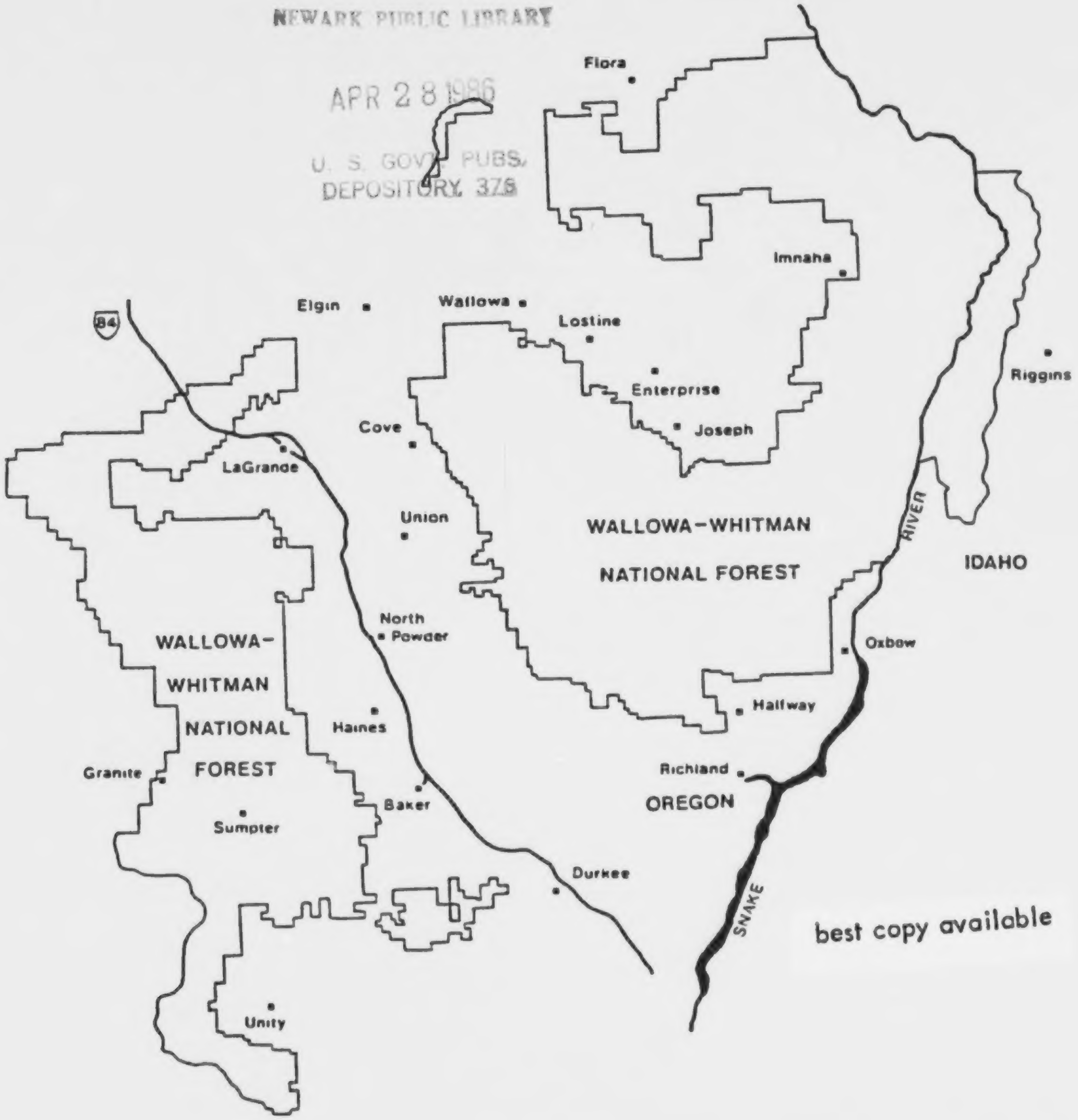
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CORRECTION
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Wallowa-Whitman National Forest Land and Resource Management Plan

Background

During the time that the Draft Environmental Impact Statement was being printed, several concerns arose as a result of additional review. These concerns dealt with three general subjects: (1) formulation of the current direction (no-action) alternative, (2) economic stratification of forest lands, and (3) the formulation of an alternative (Alternative G) in response to the issue of below-cost timber sales. Concerns with the current direction alternative (Alternative A) center on the application of National Forest Management Act minimum management requirements. The specific concerns with Alternative G relate to its description and formulation. The need was identified to further describe the process used in economically stratifying forest lands and to correct the use of the terms "economic suitability", "economically unsuited", and "suitability screen".

It became apparent that it was necessary to clarify these matters. That is the purpose of this Correction.

Current Direction Alternative (Alternative A)

Alternative A represents the continued implementation of the land management (Unit) plans currently in effect on the Forest. Under the National Environmental Policy Act (NEPA), decisions such as those being made in the Forest planning process must consider the option of "no action" -- in this case continuing management under current management direction. In the DEIS this is displayed as Alternative A.

When Alternative A was originally formulated it was assumed that it should be modeled strictly as described in the existing unit plans, incorporating only those minimum management requirements (MMR's) from the National Forest Management Act (NFMA) which had already been implemented, or which were not in conflict with unit plan direction. In all instances but one the MMR's were compatible with current management direction, the exception being the distribution of habitat for pileated woodpeckers and pine martens (MMR's for these species are described in Appendix G to the DEIS). For this reason, it was stated that continued implementation of the unit plans could not occur without a change in Federal legislation. This statement is found in numerous places in the DEIS.

Present policy is that current direction alternatives for Forest Plans will meet all existing laws and regulations, in accordance with Section 6 of the National Forest Management Act, including the minimum management requirements. On the Wallowa-Whitman, the unit plans designate old-growth forest lands (the habitat preferred by pileated woodpeckers and pine martens) in amounts adequate to meet total needs, but in several areas of the Forest the distribution requirements of the MMR's are not met. However, there is sufficient flexibility in plan implementation to permit meeting the distribution requirement. This could be accomplished by rescheduling timber harvest in several old-growth stands in areas where there is old-growth in excess of the MMR level and reserving from timber harvest new stands in areas where old-growth is inadequate. From this point of view it can be said that the alternative meets MMR's and that statements to the contrary in the DEIS are inappropriate. Making these changes would not affect Forest outputs, efficiency, or environmental consequences (except positively, through improved distribution of habitat for pileated woodpeckers and pine martens). The displays and discussion of outputs, efficiency, and environmental consequences in the DEIS are not affected by the changes, and can be used to illustrate the implementation of current direction including meeting the minimum management requirements.

This change refers to narrative descriptions on pages S-5 of the DEIS Summary, II-26 of the DEIS, and to the footnotes of numerous tables.

Economic Stratification of Forest Lands

In describing Alternative G, and in several other places in the DEIS and its appendices, the terms "economic suitability", "economic suitability screen", and "economically unsuited" are used. It has become apparent during the course of our review process that these terms are subject to misunderstanding and that some clarification is needed. No economic screening process, outside of FORPLAN, was used in developing any Forest Plan alternative. Each alternative is designed to meet the management objectives of that alternative as efficiently as possible.

Within the resource objectives of any alternative, the FORPLAN model has the flexibility to choose which lands to schedule for timber harvest. Forest lands which are not scheduled for timber harvest within a given alternative are described in the DEIS as being "economically unsuited". An example of this would be timber stands where the terrain is such that helicopters are required to remove the timber and where the value of the timber is low. Actually, these lands could best be described as not being needed to achieve the resource objectives of the particular alternative, or that they are not economically efficient to harvest, given the resource objectives of the specific alternative.

The reader is encouraged to consider these meanings in reviewing the DEIS. Refer to page S-9 of the DEIS Summary, pages II-58, III-20, and IV-38 of the DEIS, and pages B-25, B-142, B-145, B-161, and E-1 of the DEIS appendices.

Alternative G

Alternative G was formulated in response to National and local concerns over selling timber sales "below-cost" (meaning that the costs associated with managing the lands for timber production exceed the timber receipts). This concern is well documented in the publication "Below-Cost Timber Sales: Analysis of a Forest Policy Issue", by Ervin G. Schuster and J. Greg Jones, published by the Intermountain Research Station as General Technical Report INT-183, May, 1985. While the formulation of the other alternatives optimizes Forest-wide efficiency, this particular alternative is intended to deal with site-specific efficiency, i.e., efficiency at the project level. The concern with project level efficiency is that certain types of lands, specifically those with high management, harvest, or access costs combined with low timber values, tend to reduce the total value of a timber sale, often to the point where the total cost of management exceeds the receipts from that sale. The train of logic in formulating this alternative was that elimination of lands with negative net cash values would provide an estimate of the outputs and effects of eliminating below-cost timber sales.

In modelling this alternative the intent was to schedule timber harvest only from those stands where harvest could occur with a positive cash rate of return. This was accomplished through a constraint within the FORPLAN model which precluded negative-valued lands from being scheduled for harvest. The land allocation from Alternative B (relatively free of constraints compared to the other alternatives) was used to allow the FORPLAN model maximum flexibility in scheduling harvest from lands having positive net values. The nondeclining evenflow constraint was applied to this alternative to retain comparability with the majority of other Forest Plan alternatives.

In addition to the individual stands which were not scheduled due to their negative values, the Lake Fork roadless area failed to enter the FORPLAN solution. This occurred as a result of the high road development costs that would be necessary to harvest the timber in the area.

It is important to consider both the positive and negative consequences which could result from implementing this alternative. Since the economically inefficient lands on the Forest would not be managed for timber production and since there were few additional resource constraints placed on the model, individual timber sale offerings from the Forest would be more efficient--that is, the ratio of receipts to costs would be more favorable--than in any other alternative displayed in the DEIS. This is reflected in the present net value (PNV) of the alternative and in its net cash flow, which are higher in this alternative than in any other alternative considered in detail. Because fewer lands would be available for timber harvest, timber harvest is reduced from that of alternative B, where the additional lands would be available for timber harvest.

While this alternative responds well to economic efficiency concerns at the project level it provides a suboptimal solution on a Forest-wide basis. Limiting harvest to individual stands having a positive rate of return reduces the flexibility of the model to blend in negative-valued stands as a means of filling in timber harvest scheduling gaps through time. Loss of this flexibility has costs both in terms of PNV and timber harvest level. In a FORPLAN run otherwise identical to Alternative G, which retained the flexibility to schedule these lands for harvest, the PNV was $5 million higher and the annual timber harvest level was 0.4 million cubic feet more in the first decade. The stand efficiency criterion forces the model to delay harvest on some high-valued lands in order to meet the harvest dispersion constraint in later decades. That is, the solution comes out dollars ahead by blending in some negative-valued stands rather than reducing the overall level of harvest.

This additional discussion should be considered in evaluating Alternative G, particularly during review of narrative descriptions and tables found on page S-8 of the DEIS Summary, pages I-7, II-58, II-59, II-60, II-111 through II-130 of the DEIS, and pages B-132 and B-133 of the DEIS appendices.

Other Errata

The responsible official (second page of the DEIS) should be James F. Torrence.

Projected payments to counties displayed in numerous places in the Draft Environmental Impact Statement are in error. The correct values are shown below for each alternative. The historical figure for the period 1979-1983 averaged $3,678,000 (1982 dollars).

PROJECTED FIRST-DECADE PAYMENTS TO LOCAL GOVERNMENTS
(Thousand Dollars--1982 Dollars)

A	B	B-dep	C	C-dep	D	E	F	G	H
3,812	4,565	3,721	3,970	4,695	4,177	4,157	2,750	3,908	3,600

The figures for payments to local governments are also reflected in narrative form on pp. II-70, II-71, IV-57 and in graphic form in Figure S-13 of the DEIS Summary.

On page S-21 of the Summary of the DEIS the subtotal under Wilderness for Alternatives E and F should be 583,713 acres rather than 582,700.

On page IV-8 of the DEIS the total acres open for mineral entry should be 183,200 rather than 190,000.

On page IX-2 Best Management Practices IV (24) should be IV (42).

On page IX-3 Fire II (4, 14, etc.) should be III (4, 14, etc.)

Change in Review Period

AS A RESULT OF THE DELAYED DISTRIBUTION OF THIS DOCUMENT, THE REVIEW PERIOD IS EXTENDED BEYOND THE DATE DISPLAYED ON THE FIRST TWO PAGES OF THE DEIS. COMMENTS ON THE DEIS MUST BE RECEIVED BY THE FOREST SUPERVISOR, P. O. BOX 907, BAKER, OR 97814 BY JULY 15, 1986.

THERE ARE MANY GREAT INTERESTS ON THE NATIONAL FOREST WHICH SOMETIMES CONFLICT A LITTLE. THEY MUST ALL BE MADE TO FIT INTO ONE ANOTHER SO THAT THE MACHINE RUNS SMOOTHLY AS A WHOLE. IT IS OFTEN NECESSARY FOR ONE MAN TO GIVE A LITTLE HERE ANOTHER A LITTLE THERE. BUT BY GIVING WAY A LITTLE AT PRESENT THEY BOTH PROFIT BY IT A GREAT DEAL IN THE END.

NATIONAL FORESTS EXIST TODAY BECAUSE THE PEOPLE WANT THEM. TO MAKE THEM ACCOMPLISH THE MOST GOOD THE PEOPLE THEMSELVES MUST MAKE CLEAR HOW THEY WANT THEM RUN.

Gifford Pinchot

United States
Department of
Agriculture

Forest
Service

Wallowa-Whitman
National Forest

P. O. Box 907
Baker, OR 97814

Reply to 1920

Date

Dear Reviewer:

Enclosed for your review are the Draft Environmental Impact Statement (DEIS) and the proposed Forest Land and Resource Management Plan (Forest Plan) for the Wallowa-Whitman National Forest.

The DEIS evaluates ten alternatives for managing some 2.3 million acres of National Forest land. It adopts the recently completed Hells Canyon Comprehensive Management Plan without change in all alternatives. The Forest Service preferred alternative is Alternative C and the proposed Forest Plan is based on that alternative. Public comment may result in Alternative C being selected as described, a modification of Alternative C, or a different alternative being chosen.

A response form is enclosed for your comments. If you prefer, feel free to write a letter, telephone or visit this office. All comments will be considered in preparing the final EIS and Forest Plan.

Several meetings will be held within the Forest vicinity to explain, answer questions and discuss the DEIS and proposed Forest Plan. We will be contacting you to provide dates and places for these meetings.

We need your thoughts to make this a good plan for managing the Wallowa-Whitman for the next 10-15 years. Comments should be received no later than June 20, 1986 at the following address:

Forest Supervisor
Wallowa-Whitman National Forest
Federal Building
P. O. Box 907
Baker, OR 97814

Sincerely,

READEX
FICHE

JERRY G. ALLEN
Forest Supervisor

Enclosure

FS-6200-11b (7/81)

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Wallowa-Whitman National Forest Land and Resource Management Plan

Baker, Union, Wallowa, Grant, Malheur, and Umatilla Counties in Oregon;
Adams, Nez Perce, and Idaho Counties in Idaho

Lead Agency:	USDA - Forest Service
Responsible Official:	Tom Coston, Regional Forester Pacific Northwest Region (for NFS lands)
For Further Information: Contact:	Bruce McMillan, Environmental Coordinator Wallowa-Whitman National Forest P. O. Box 907 Baker, OR 97814 (503) 523-6391

Abstract: This Draft Environmental Impact Statement describes ten alternatives for the Land and Resource Management Plan for the Wallowa-Whitman National Forest and those portions of the Nezperce and Payette National Forests within the Hells Canyon National Recreation Area (HCNRA). These areas, in combination, total 2,349,215 acres.

Each alternative responds differently to identified major issues and concerns. The alternatives are: (A) continuation of current management direction with levels of outputs and activities updated to reflect the current data base; (B) high commodity - to the extent possible, this alternative achieves outputs and activities for the Wallowa-Whitman National Forest as specified in the Pacific Northwest Regional Guide; (B-departure) provides levels of timber outputs specified in the Forestry Program for Oregon; (C) a commodity/amenity blend slightly more commodity oriented than the current direction alternative; (C-departure) a commodity/amenity blend slightly more commodity oriented than the current direction alternative with a timber harvest schedule that departs from nondeclining evenflow; (D) commodity/amenity blend with commodity emphasis; (E) commodity/amenity blend emphasizing roadless recreation opportunities; (F) an amenity oriented alternative which emphasizes roadless recreation opportunities and maximizes fish and wildlife habitat; (G) a commodity-oriented alternative with timber harvest limited to stands having a positive present net value; (H) a commodity/amenity blend with economic efficiency emphasis. The Forest Service preferred alternative is Alternative C.

Comments on this draft must be received by the Forest Supervisor, P.O. Box 907, Baker, OR 97814 by June 20, 1986.

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ORGANIZATION OF THE DOCUMENTS

Included in the package are three books and a packet of maps. They are the Draft Environmental Impact Statement (DEIS), appendices to the DEIS, the Proposed Forest Plan, and the maps.

A general outline of the documents and a brief summary of the chapters follow:

In the DEIS

Summary; briefly discusses the major facets of Chapters I through IV.

Chapter I, "Purpose and Need," identifies the laws and regulations used to direct the planning and environmental analysis process. It also identifies the public issues and management concerns about the land and resource management of the Wallowa-Whitman National Forest.

Chapter II, "Alternatives, including the Proposed Action," describes the alternatives, explains their formulation, and compares them.

The accompanying map packet contains maps of land management areas on the Forest for each of the alternatives.

Chapter III, "Affected Environment," presents the biological, physical, social, and economic setting of the Wallowa-Whitman National Forest.

Chapter IV, "Environmental Consequences," discusses the environmental consequences of the alternatives, including unavoidable adverse impacts, irreversible or irretrievable effects, energy requirements, and coordination with other agencies.

Following these four chapters are the List of Preparers; list of agencies, or organizations, and persons to whom copies of the statement are sent; References; Glossary; and Index.

The Appendices contain technical discussions about various aspects of the planning process. They contain more detailed descriptions of some environments, analyses, and effects.

The Proposed Forest Plan contains information about how the Forest land and resources will be managed if the preferred alternative is implemented. Here are found the detailed standards and guidelines for the preferred alternative.

It is important to remember that the Proposed Forest Plan is a proposal, and that the Draft Environmental Impact Statement is a draft. The information gained in the public review process can result in a modified or even new preferred alternative, and in a modified or substantially new Forest Plan.

In addition to the material included in the DEIS, Proposed Forest Plan, and supporting appendices, other process records are on file at the Supervisor's Office, Wallowa-Whitman National Forest, P.O. Box 907, Baker, OR 97814. These include records documenting the timber land suitability determination; process material for recreation, wildlife, range, diversity; and yield table development. This information is available upon request.

SUMMARY

This discussion summarizes Chapters I through IV of the Draft Environmental Impact Statement.

Affected Environment

There are 2.6 million acres within the boundaries of the Forest, making it the largest single administrative unit of the Pacific Northwest Region. Included are the Wallowa, the Whitman, portions of the Nezperce and Payette National Forests, and the Hells Canyon National Recreation Area (HCNRA). Of that total, 2.3 million acres are National Forest System lands. Interspersed within the administrative area of the Forest are various other Federal, State, county, and private land parcels. The Forest is in the northeast corner of Oregon and the west central edge of Idaho as shown on the vicinity map on the following page. It lies within Wallowa, Union, Baker, Malheur, Umatilla, and Grant Counties in Oregon; and Idaho, Adams, and Nez Perce Counties in Idaho. The Forest Supervisor's Office is in Baker, Oregon.

With snow-capped peaks, numerous mountain lakes and streams, a wide variety of wildlife, and spectacularly deep canyons, the Forest is a popular recreation area. It has a rich history that includes Chief Joseph of the Nez Perce; the lore of gold mining and Chinese laborers; and ranching and logging that continue today.

Purpose and Need for Action

Purpose of the DEIS and the Proposed Forest Plan

This DEIS describes a proposed action and alternative actions for management of the land and resources of the Wallowa-Whitman National Forest administrative unit. It describes and documents the analysis of each management alternative and discloses the environmental consequences of their implementation. The proposed action is the basis of the proposed Wallowa-Whitman National Forest Land and Resource Management Plan (Forest Plan) which is a separate document.

Legal Requirements

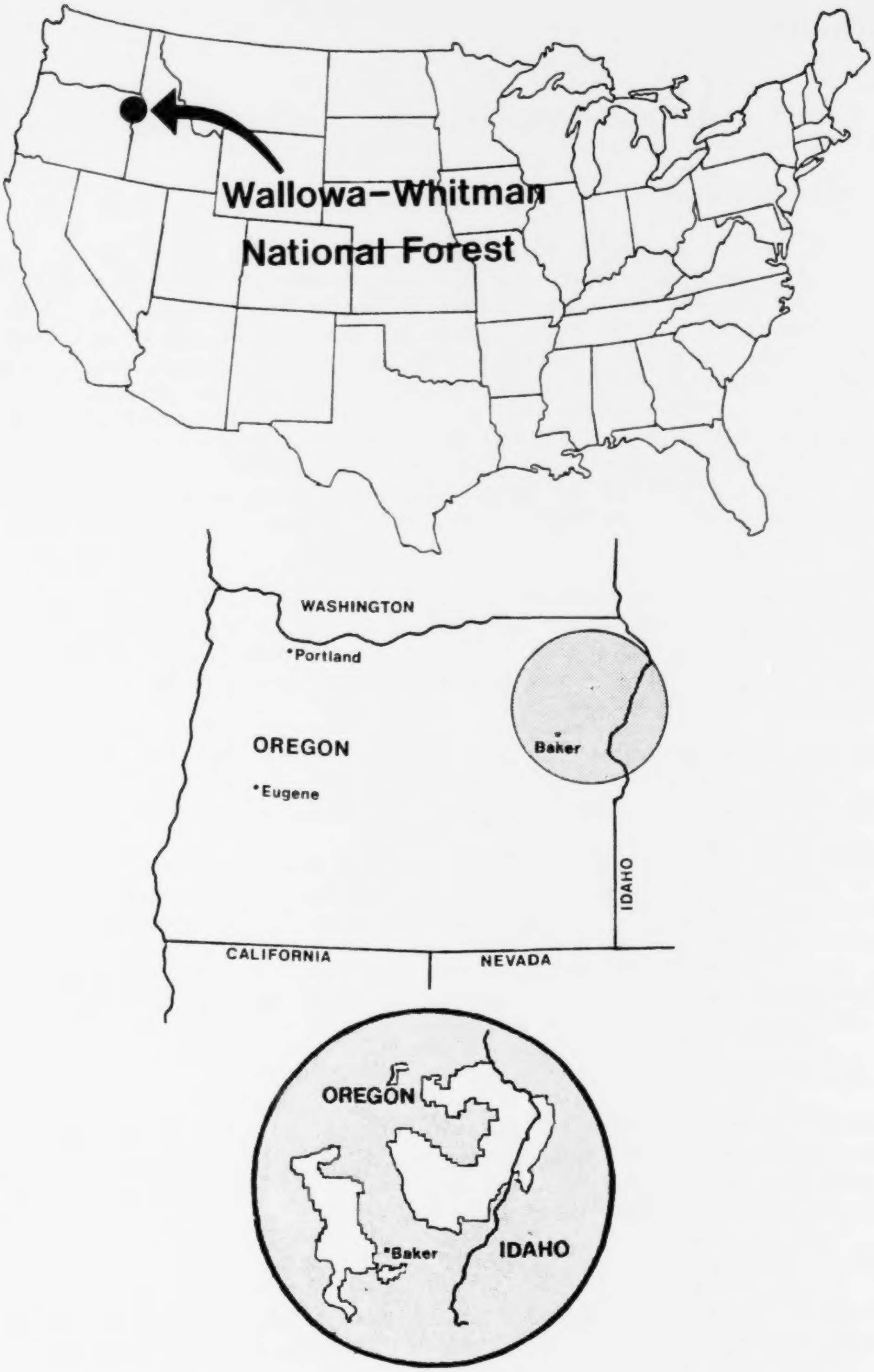
This DEIS was developed under direction from the National Forest and Rangeland Renewable Resources Planning Act (RPA), the National Forest Management Act (NFMA), the National Environmental Policy Act of 1969 (NEPA), and their implementing regulations.

Planning Period

The Forest Plan period is ten to fifteen years. Throughout this document, projections beyond that time are provided for informational purposes.

Figure S-1

VICINITY MAP


Wallowa-Whitman
National Forest
WASHINGTON
Portland
OREGON
Eugene
Baker
IDAHO
CALIFORNIA
NEVADA
OREGON
Baker
IDAHO

Public Issues and Management Concerns

Public Involvement Activities

The Forest has enlisted the assistance of the public in the planning process in many different ways. A Notice of Intent to prepare a Forest Plan and Environmental Impact Statement was published in the Federal Register. A citizens' panel was established which included members of various local government agencies and representatives of prominent local interest groups. A mailing list containing the names of some 1,100 persons who have asked to be involved in the process is used by the Forest. Those parties have been contacted at key points in the planning process and have been repeatedly invited to provide information or opinions. News releases have been used on a continuing basis to help keep the local and regional public informed. Because of the local interest, newspapers from Portland, La Grande, Baker, Lewiston, Enterprise, and Ontario have reported on the process. The Forest has been responsive to requests for speakers at service clubs, civic groups, and other organizations. The Forest has met on scores of occasions with interested individuals and groups to receive their input on the planning process, and has responded to numerous written requests for planning information.

Issues

The major issues are the driving force in the process. They set the stage for the work that needs to be done in the way of analysis, public participation, and decisionmaking. Frequently they are more easily posed as questions, as shown in the following.

Transportation. How should the Forest provide the access needed for timber management while minimizing the impact of the roads? How should the Forest satisfy recreation and wildlife objectives considering the road system already in place and the road system which is necessary for management of the timber resource? How much road access do people want, are the roads needed, and are they economically efficient?

Timber Production. How much timber should be harvested from the Wallowa-Whitman? What species mix? What size trees? What should the harvest schedule be? Should there be a departure from nondeclining flow? 1/ What is the cost in other resource values forgone?

Local Economy. How should the Forest be managed considering the importance it has for the local economy in terms of jobs, personal income, 2/ and payments to local governments? 3/

1/ Nondeclining evenflow - a harvest schedule for timber or any other resource in which the average annual harvest increases or remains static through time but never decreases. Also referred to as nondeclining flow.

2/ As used here, personal income refers to employee compensation in the form of wages and salaries.

3/ Payments to local governments are monies remitted from the Federal Treasury to local governments based on Forest receipts such as those generated from the sale of timber and forage.

Management of Nonwilderness Roadless Areas. How much nonwilderness roadless area should be retained in an undeveloped state?

Old-Growth Forest. What level of old-growth is necessary to provide wildlife habitat diversity and to satisfy the recreation and aesthetic desires of various Forest users? What will be the cost in terms of dollars and timber supplies for management of this resource as old-growth?

Wildlife Habitat - Deer and Elk. What mix of cover* and forage is desired for deer and elk on the Wallowa-Whitman and what is the cost of providing it in terms of dollars and other resource production?

Recreation Diversity. What mix of Forest conditions would best satisfy expressed desires of the users of the Wallowa-Whitman National Forest for a broad range of recreation opportunities?

Livestock Production. What level of investment in range management is appropriate considering local rancher and community needs, National objectives for livestock production, and returns to the Federal Treasury? What levels of grazing are appropriate within the proposed investment levels? Are such levels consistent with other multiple-use objectives?

Minerals. How much and which lands should remain open to mineral entry on the Wallowa-Whitman National Forest?

Alternatives

Alternative Development Process

Formulating a broad range of reasonable management alternatives for a National Forest is an extensive and complex process. Each alternative is a combination of land uses, Forest management activities, and schedules.

Alternatives must consider the resource capabilities (including both the potentials and the limitations) of the different lands found throughout the Forest. Each alternative is designed to manage the land to achieve specific goals and objectives. Some of these objectives, such as maintaining air and water quality, are common to all alternatives; other objectives, such as the mix and amount of resource outputs, vary among the alternatives.

By managing the Forest lands and resources in different ways, varied objectives can be achieved which respond to the issues differently, providing different combinations of public benefits. Forest management can vary by what is done, where it is done, when it is done, and how it is done. These varying combinations of management activities and schedules result in different resource outputs and environmental conditions, thus responding to the unique objectives of each alternative.

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* Cover refers to the vegetation which provides these big-game species with protection from extremes of heat and cold and which also provides them security.

An alternative is formulated to resolve an issue, or issues, by considering these factors:

- the resources available on different areas of the Forest;
- the public's need or demand for different combinations of commodities and amenities; 1/
- combinations of actions which are planned for different areas ("management strategies");
- the schedule of activities; and
- the interrelationship of capabilities, management strategies, and schedules which result in resource outputs and environmental conditions which are consistent with the objectives of the alternative.

Presentation of the Alternatives

These are the different ways the Forest can be managed in response to the issues. There are, of course, literally hundreds of alternatives which could have been constructed. Each of the alternatives is described in the following pages and the response to the issues, concerns, and opportunities of each alternative is summarized in Table S-1. Maps of each alternative accompany this document.

Alternative A (Current Direction). 2/ This alternative represents continued implementation of the management direction provided by the six existing land management Unit Plans including the management plan for the Hells Canyon NRA. Adjustment has been made for the Oregon Wilderness Act of 1984. The intent of this alternative is to provide an estimate of the activities and outputs likely to occur if management were to continue under the direction found in the unit plans. It also serves as a standard of comparison for evaluating the other alternatives. To make this alternative consistent and comparable with the other alternatives, current resource yield tables are used along with the most recent inventory information. This includes current timber inventory information and improved data on the suitability of land for timber production. Only National Forest Management Act requirements that are a part of the current direction, as established in the unit plans, are incorporated into this alternative. Since this alternative does not fully meet the requirements of the National Forest Management Act, it cannot be implemented without a change in law.

1/ "Commodities" refers to timber, livestock grazing, minerals, and anadromous fish. "Amenities" refers to such considerations as recreation, scenery, and wildlife.

2/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

The total Forest budget is constrained at the average budget level during the period 1980-1983, expressed in 1982 dollars. The proportion of the Forest budget expended by various functions (such as Timber, Range, or Recreation) varies depending upon the level of outputs being provided. Within this budget, output and activity levels projected by the unit plans and resource management plans are met as closely as possible.

Alternative B (RPA). 1/ This alternative was formulated with primary emphasis on RPA targets and the timber, livestock forage, and the local economy issues. This alternative is the RPA alternative 1/. It attempts to provide outputs and activity levels assigned the Forest through National and Regional planning. RPA targets for recreation, timber, livestock, anadromous fisheries, and forage are met or exceeded. Timber harvest and road management activities on winter ranges are restricted to better meet big-game needs.

Alternative B-departure. 2/ This alternative was formulated with primary emphasis on issues of timber, forage and the local economy. Timber outputs are provided at the level prescribed in the Oregon Department of Forestry's Forestry Program for Oregon (FPFO). This program calls for high levels of timber outputs for five decades to mitigate a projected shortfall in timber harvest from private lands. In order to achieve the FPFO timber output levels, it is necessary to depart from nondeclining evenflow (i.e., harvest timber at a high level for the first five decades and substantially reduce harvests in subsequent decades). It is also necessary to harvest many timber stands significantly earlier than culmination of mean annual increment (CMAI). (CMAI is the age at which the average annual increment of growth in a timber stand reaches its maximum level). Since the National Forest Management Act requires that CMAI shall generally have been reached before harvest occurs, this alternative cannot be implemented without a change in law.

This alternative also places higher emphasis on range improvements and increased levels of livestock grazing than does Alternative B. As a result of increased timber and livestock production, economic activity indicators for personal income and jobs are the highest of any alternative. Payments to counties are reduced from Alternative B because this alternative requires harvest from less efficient timber lands and requires more

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1/ The alternative specified in the Regional Guide, itself the result of RPA (Forest and Rangeland Renewable Resources Planning Act of 1974) and NFMA (National Forest Management Act of 1976).

2/ Alternative B-departure cannot be implemented without change in Federal legislation. It violates NFMA requirements that timber stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

intensive (and more expensive) timber management practices. Thus, total economic returns to the Federal government are reduced along with the counties' share of these returns.*

Management areas are the same as for Alternative B. The increased rate of timber harvest and the emphasis on forage production for livestock reduce elk habitat effectiveness.

Alternative C (Proposed Action). This alternative was formulated to respond to goals for timber and range by maintaining moderately high outputs of timber and livestock forage. It places greater emphasis on deer and elk habitat than do Alternatives B or B-departure. Emphasis is also placed on the transportation management and recreation diversity issues. It provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges and on selected summer ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harrassment of big game. Nonwilderness portions of the North Fork John Day watershed are managed emphasizing anadromous fish habitat protection. A section of the Grande Ronde River is recommended for addition to the National Rivers System, as are sections of the North Fork John Day and the Lostine Rivers. Alpine and subalpine areas in the Elkhorn Mountains and around the perimeter of the Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. A high level of visual quality is retained and high quality deer and elk habitat is provided on 525,000 acres.

Alternative C-departure. This alternative was formulated to emphasize the timber, forage, and local economy issues. Emphasis is also placed on deer and elk habitat on selected summer ranges and on the recreation diversity and transportation system management issues. The land management areas for this alternative are identical to those of Alternative C. However, the timber harvest schedule is adjusted to provide higher levels in the first decade (a departure from nondeclining evenflow). The objective of this harvest schedule is to continue to provide recent historical volumes of nonlodgepole pine sawtimber during the first decade. Local mills prefer clear wood products which are more characteristic of large diameter material. This is a distinct alternative, not simply a variation of Alternative C. If Alternative C were selected, it would not be possible to convert to Alternative C-departure during the life of the plan.

Alternative D. This alternative was formulated to deal with the issues for timber and range by maintaining moderately high outputs of timber and livestock forage. It places greater emphasis on deer and elk habitat than do Alternatives B or B-departure but less than in Alternatives C or

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* Money received from timber purchasers is remitted the Federal Treasury. By Federal law, local governments are given one-fourth of the gross value of the sale which includes the value of trees on the stump (stumpage value), the cost of access roads (purchaser credit roads), and collections made under the Knutson-Vandenberg Act for improvements.

C-departure. Emphasis is also placed on the transportation management and recreation diversity issues. It provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harrassment of big game. Nonwilderness portions of the North Fork John Day watershed are managed to protect anadromous fish habitat but with more emphasis on commodity production. A section of the Grande Ronde River is recommended for addition to the National Rivers System, as are sections of the North Fork John Day River and the Lostine River. Alpine and subalpine areas in the Elkhorn Mountains and around the perimeter of the Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. High quality deer and elk habitat is provided on 350,000 acres. A high level of visual quality is retained.

Alternative E. This alternative was formulated emphasizing issues related to undeveloped areas, transportation system management, recreation diversity, and timber management. All existing roadless areas are retained in a roadless condition. This serves to retain the existing opportunities for semiprimitive types of recreation. Outside the existing roadless areas, production of commodity outputs is emphasized. A minimal level of habitat protection is provided on big-game winter ranges. Use of roads on winter ranges is restricted to reduce harrassment of big game. Sections of the Grande Ronde, Lostine, North Fork John Day, and North Powder Rivers are recommended for addition to the National Rivers System, totalling 36 miles. Visual quality is substantially reduced outside roadless areas.

Alternative F. This alternative was formulated emphasizing the wildlife habitat, recreation diversity, old-growth timber, and transportation system management issues. It provides a high level of protection and enhancement of anadromous fisheries. Approximately 60 percent of the nonwilderness roadless area outside the Hells Canyon National Recreation Area remains in a roadless condition. All eligible rivers outside the Hells Canyon NRA and Wilderness are recommended for inclusion in the National Rivers System, totalling some 85 miles. All watersheds used by anadromous fish are managed emphasizing fish habitat protection and enhancement. This includes the Grande Ronde, Wallowa, and North Fork John Day River systems and that portion of the Imnaha River system not in the National Recreation Area. Timber is managed to provide snags for wildlife at not less than the 40 percent level across the Forest. Both winter and summer big-game ranges provide high quality big-game habitat.

Alternative G. This alternative was formulated with primary emphasis on the timber, livestock forage, and local economy issues. Timber harvest and road management activities on winter ranges are designed to achieve high quality big-game habitat.

Alternative C was formulated in a land management area pattern identical to Alternative B except that timber harvest is limited to stands having a positive present net value (meaning the discounted monetary benefits of managing the existing and future stands of timber on a particular piece of land are greater than the discounted monetary costs). This alternative reflects the National concern over timber sales which are sold below cost.

Under this alternative, no "below-cost"* timber sales are apt to occur. This results in a substantial reduction in timber outputs from Alternative B. Its present net value, as shown in Figure S-9, is higher than for Alternative B because it eliminates expenditures for timber harvest on lands where the projected monetary benefits of harvest do not exceed the costs.

Other differences include reduced economic stability in local communities and reduced adverse impacts on other resources such as wildlife. The only difference in land use between Alternatives B and G is that G leaves more land unharvested including the Lake Fork Roadless Area, based on economic criteria.

Alternative H. This alternative was formulated to deal with the timber issue by maintaining a moderately high output for timber but with greater emphasis on deer and elk habitat than in alternatives B, B-departure, or E and less emphasis on livestock grazing. Its land use pattern is identical to that of Alternative C except that less land is used for timber management. It provides a lower level of grazing for domestic livestock. The biggest difference between Alternatives C and H is that Alternative H emphasizes economic efficiency in timber management more than C does. This tends to reduce logging of steep slopes and investment in tree planting, site preparation, and precommercial thinning. It results in reduced timber harvest and a higher present net value.

Other consequences of this increased emphasis on economic efficiency include reduced economic stability of local communities, reduced impact on big game and other wildlife species, a higher level of old-growth retained (more lands being economically unsuited), and reduced potential for soil and water degradation. Like Alternative C, emphasis is also placed on the transportation management and recreation diversity issues. It provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges and on selected summer ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harrassment of big game. Nonwilderness portions of the North Fork John Day watershed are managed to emphasize anadromous fish habitat protection. A section of the Grande Ronde River is recommended for addition to the National Rivers System, as are sections of the North Fork John Day and the Lostine Rivers. Alpine and subalpine areas in the Elkhorn Mountains and around the perimeter of the Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. Management activities provide high quality deer and elk habitat on 525,000 acres. A high level of visual quality is retained.

Management Strategies (MS'S)

Each alternative distributes the lands of the Forest to different management areas managed under different management strategies. Acreages in the different management areas vary from one alternative to another (see Table S-2).

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*"Below-Cost" timber sale is defined here as a sale in which the dollar costs of the sale, including all costs resulting from the sale, are greater than the dollar benefits.

A management strategy is a cost-efficient combination of management practices and intensities selected and scheduled to attain certain goals and objectives. A management area is the unit of land to which a management strategy is applied. The management area locations can be found on the alternative maps accompanying this Draft Environmental Impact Statement. In essence, the management area is a unit of land to be managed for certain goals and objectives, to achieve or maintain a desired condition in the future. For each acre of the Forest, several management strategies may be applied, each of which would achieve a different future condition. Therefore, there are many potential management areas that may be used in developing alternatives. While the number of acres in each management area may vary by alternative--depending on the suitability of available land for each management strategy and the guiding goals, objectives, and economic criteria used to select appropriate acres for the alternative--the management strategy applied in each management area remains constant.

Although certain renewable resources are emphasized in each of the following descriptions, each management strategy provides for a combination of Forest uses. All management strategies provide water, wildlife, forage, protection of riparian habitat and many forms of recreation; many provide timber yields. Management direction identifies the renewable resource use which has highest priority and therefore tends to limit the output levels of other resources which may be competing on the same land.

The following are brief descriptions of the management strategies for the Wallowa-Whitman National Forest. Detailed descriptions are found in the Proposed Forest Land and Resource Management Plan accompanying this DEIS.

Management Strategy 1

Management emphasizes wood fiber production while providing relatively high levels of forage and recreational opportunities. Temporary forage increases result from silvicultural activities. Timber is managed according to standards and guidelines common to all management areas (see Appendix D).

Timber management provides a mixture of even-aged stands (uneven-aged stands may occur in riparian and visual emphasis areas within Management Area 1) up to 40 acres in size. These stands are to be managed at intensities promoting vigorous, healthy trees commensurate with the productive potential of the sites. Regeneration harvest units will be separated by uncut stands containing one or more logical logging units. Regeneration harvest of units adjacent to an existing regenerated unit will not be initiated until the desired crop tree stocking on the existing unit reaches 4.5 feet in height. This mixture of stand ages and sizes provides a degree of diversity for aesthetics, wildlife and a high level of wood fiber and forage production. Open roads are normally limited to 2.5 miles per square mile.

Management Strategy 2

Management Strategy 2 emphasizes wood fiber and forage production although timber harvest scheduling is constrained to provide greater recreational variety (especially hunting experiences) and wildlife diversity than are found in Management Strategy 1.

Timbered areas consist of timber stands (40 acres or less) of a variety of ages. Regeneration harvest of units adjacent to an existing regenerated unit is not to be initiated until 80 percent of the desired crop tree stocking on the existing unit reaches 10 feet in height.

Management Strategy 3

This strategy emphasizes big-game habitat while providing relatively high levels of timber production. Like Management Strategies 1 and 2, this management strategy provides a broad array of Forest uses and outputs. However, management emphasizes maintenance of high quality big-game (particularly elk) habitat and more challenging hunting opportunities.

Timber harvest is the primary tool for managing big-game habitat. When in a managed condition, timbered areas are a mosaic of even-aged stands, 40 acres or less in size. These stands are of different ages and are dispersed to provide a mixture of forage areas, thermal cover, and hiding cover. Like Management Strategy 2, regenerated trees must be 10 feet tall before harvesting adjacent units, but in Management Strategy 3 additional restrictions apply to any harvest which reduces hiding or thermal cover, in order to better achieve optimum distributions of cover for elk. Open public road access is generally not more than 1.5 miles per square mile.

Management Strategy 4 (Wilderness)

The intent is to preserve the wilderness resource of these areas. These areas are managed in accordance with the Wilderness Act of 1964, P. L. 94-199 (establishing the Hells Canyon Wilderness) and the 2320 section of the Forest Service Manual. The existing 582,700 acres of wilderness are common to all alternatives.

The intent of the Wilderness Act is to preserve and protect the natural condition and characteristics of designated lands and to provide for current and future public enjoyment of these areas and their wilderness character. These areas remain essentially unaltered and undisturbed by man, with natural ecological processes (including the natural role of fire) permitted to operate with a minimum of human interference.

Management Strategy 5 (Phillips Lake Area)

This area includes Mason Dam, Phillips Lake and surrounding lands, as described in the Reservoir Area Management Plan of March 1971. The area is to be managed recognizing a variety of resource values with emphasis on recreation opportunities.

Timber resources are managed to provide an aesthetically pleasing forest for public enjoyment. Timber stands are maintained in a thrifty condition with tree spacing providing a park-like appearance at some periods during a stand's life.

Management Strategy 6

Management emphasizes opportunities for those dispersed recreation activities usually recognized within relatively large undeveloped areas outside wilderness. The recreation activities usually involve combinations of viewing scenery, hunting, fishing, rock hunting, observing wildlife, snowshoeing, cross-country skiing, camping, hiking, backpacking and harvesting of minor products such as mushrooms and berries.

These areas are to remain relatively natural and undeveloped. A road density level similar to 1985 levels will be maintained. Although recreational site development is not precluded under this management strategy, the intent is to emphasize primitive and semiprimitive recreation opportunities. These areas will be accessed largely by trail with some trails or primitive roads open to motorized use. Timber harvest is permitted in the event of catastrophic tree mortality.

Management Strategy 7

Management is intended to preserve the wild, scenic, and recreational values of those rivers or river segments recommended for inclusion in the National Rivers System. The objective is to maintain the characteristics of the recommended river sections at, or above, the minimum levels required for inclusion, pending a decision by Congress. Recommended rivers or river sections will be managed to maintain those characteristics which contribute to the recommended classification. (Also see Wild and Scenic Rivers Act, Public Law 90-542).

Management Strategy 8 (HCNRA)

This area includes the wild and scenic river corridor along the Snake River within the Hells Canyon National Recreation Area and is common to all alternatives. The primary emphasis is on maintaining the recreation experiences available at the time the area was established. Maintenance of visual qualities is especially important as is the management of people. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 9 (HCNRA)

In these areas all activities will be managed to provide opportunities for dispersed recreation and to enhance native vegetation. It is envisioned that these areas will eventually be almost entirely occupied by native plant species. Range condition will be satisfactory and this condition will be achieved and maintained primarily by nonstructural means. These areas will provide a mix of primitive, semiprimitive nonmotorized and semiprimitive motorized recreation opportunities. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 10 (HCNRA)

This management strategy is applied to grasslands interwoven with timbered stringers in the Hells Canyon National Recreation Area and is common to all alternatives. It is intended that the grassland portions of these areas will be managed to provide maximum forage production with ranges maintained in satisfactory condition and structural improvements being rustic in nature. Timbered portions will provide old-growth habitat at approximately current levels. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 11 (HCNRA)

These areas combine dispersed recreation with timber management on the more productive timber growing sites within the NRA. Use of this strategy is constant throughout all alternatives.

The objective is to provide a variety of tree species, a diversity of healthy timber stands and ample dispersed recreation opportunities. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 12 (Research Natural Areas)

Research natural areas (RNA's) are intended to promote and protect natural diversity. RNA's typify important forest, shrubland, grassland, alpine, aquatic and geologic types and other natural situations that have special and unique characteristics of scientific interest and importance. Activities in RNA's are limited to research, study, observations, monitoring, and kinds of educational activities that are nondestructive and nonmanipulative.

Management Strategy 13 (Homestead Further Planning Area)

This strategy applies to that portion of the Homestead Further Planning Area under Forest Service management and is common to all alternatives. The USDI Bureau of Land Management, which manages the largest share of the further planning area, is responsible for preparing a recommendation to Congress either for wilderness or nonwilderness use. This area will be managed to preserve wilderness characteristics until the detailed study can be completed and Congress determines whether or not wilderness is the most suited allocation. If allocated to nonwilderness, this largely nontimbered area will be managed as illustrated on the alternative maps.

Management Strategy 14 (Starkey Experimental Forest and Range)

This strategy is applied to the 27,100-acre Starkey Experimental Forest and Range and is common to all alternatives.

The area is allocated to research use and will be managed to protect existing research projects and provide for future research needs. In addition to its research contribution the experimental forest is expected to provide a variety of other benefits including timber and livestock forage when compatible with research uses.

Management Strategy 15

This strategy applies to old-growth forest. Although there is no wildlife species known to rely solely on old-growth habitat, there are 20 animal species on the Wallowa-Whitman which indicate definite preference for mature or old-growth forest. Examples of these are the goshawk, barred owl, pileated woodpecker, and Townsend's warbler. Old-growth forest habitat represents the best habitat for these species. It is not known whether other habitats are sufficient to maintain viable populations of these species without an available reservoir of old-growth. These areas include timber stands at widely ranging elevations and aspects, and in a variety of plant communities. It is intended that these stands will continue to provide the quality habitat needed by those wildlife species dependent upon mature and old-growth timber.

Management Strategy 16 (Administrative and Recreation Sites)

This management strategy applies to all administrative sites such as work centers, fire lookouts, campgrounds and other areas which are occupied by facilities for administration, public recreation or features of cultural significance. Included are three summer home tracts and two ski areas.

Management Strategy 17 (Power Transportation Facilities)

This strategy includes areas which are currently in use or are proposed for the transport of gas, oil, or electricity.

Management Strategy 18

This strategy is intended to provide optimum habitat for anadromous fish and high quality habitat for big game. It also provides good habitat for resident trout. Within this strategy, stream shade and stream channel conditions are managed to provide anadromous fish habitat at 90 percent of the smolt habitat capability index.

The dispersion of hiding cover, thermal cover, and forage is managed to provide near-optimum conditions.

Comparison of Alternatives

Table S-1 compares the alternatives to the issues, concerns, and opportunities important to managing the Forest and also summarizes other important facets of the alternatives. Figures S-2 through S-13 compare the alternatives graphically.

Tradeoffs Among Alternatives

Forest management affects a wide range of people. Some are primarily concerned about the Wallowa-Whitman National Forest because it is their closest National Forest, the Forest which, therefore, best meets their needs for local recreation. Others, overwhelmingly Oregon residents, see the Forest as their venue for big-game hunting. Still others see the Wallowa-Whitman as the basis for their livelihoods, whether it be logging, guiding, livestock grazing, or mining. Every individual's perspective is different and is itself a combination of perspectives--work-related and recreational, e.g.

At other levels, people are concerned about how Wallowa-Whitman outputs affect the State economy or the National recreation picture. In this array of considerations, no one individual fits into a single slot, no one is unaffected by the needs and aspirations of others.

Local area inhabitants are affected by Forest activities directly (as in the case of loggers); indirectly (as in the case of a saw repair shop); and through their expenditures in the local economy (theaters, restaurants, and so on). The Forest's influence is pervasive in the local area because its activities determine how much money the Federal treasury will remit to the local governments from the "25 percent fund," the key component of area road and school budgets.

Briefly, those whose main interest in the Forest arises from its ability to generate commodities would be well served by Alternatives B-departure, B, and D. Following those three would be C-departure, E, C, A, G, H, and F--in that order. The placement of D as being more commodity-oriented than C-departure is disputable. That placing was used because Alternative D generates more sawtimber volume after the first decade and more livestock grazing. This seemed to overshadow C-departure's high first-decade sawtimber volume.

Amenity interests would appear to be best served by Alternatives F, H, and A in that order. Alternatives C, E, and G would follow but their placing is arguable. Those with a particular or overwhelming interest in maintaining roadless areas would rank E number one--perhaps in front of all other alternatives. Those whose amenity inclination centers on overall land usage would likely place C in front of E and G. Those whose interests in amenities combine with a concern for efficiency might place Alternative G first. Alternatives C-departure, D, B, and B-departure complete the field, becoming progressively less satisfying to amenity interests.

Table S-1

RESPONSE TO ISSUES, CONCERNS, OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE

AVERAGE ANNUAL FIGURES

(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	A 1/ (Current Direction)	B (RPA)	B-dep 2/ (FPFO)	C (Proposed Action)	C-dep
Timber Production	Maintain or increase timber production/ timber offered for sale	MMCF MMBF 28.6 159	MMCF MMBF	MMCF MMBF	MMCF MMBF	MMCF MMBF	MMCF MMBF
	Sawtimber (Allowable Sale Quantity) Dec 1		28.2 139	31.9 158	36.0 179	28.3 143	36.5 177
	Dec 2		28.2 142	31.9 160	36.0 201	28.3 137	36.5 131
	Dec 5		28.2 139	31.9 162	36.0 181	28.3 137	36.5 132
	Total wood fiber including sawtimber (MMCF) in Dec 1	43.2	41.0	45.7	50.9	41.1	51.6
	Allowable sale quantity in excess of maximum efficiency in Dec 1 5/		6.6 39	5.4 35	9.5 56	5.8 30	14.0 64
	Reforestation Dec 1 Acres Planted	2,407	3,885	3,232	6,549	3,627	4,568
	Acres of Site Preparation Only 3/		1,565	1,277	2,689	1,467	1,835
	Acres Not Treated 4/		9,419	10,569	10,801	9,015	10,560
	Total Acres		14,869	15,078	20,039	14,109	16,963
	Precommercial Thinning Dec 1	3,942	7,300	7,800	10,200	6,800	6,600
Transportation System Management	Minimize new road construction/miles of road in 2030	9,300 100%	11,092 119%	11,542 124%	11,698 126%	10,991 118%	11,299 121%
	Miles of road open to public use	7,325 100%	6,931 95%	7,232 99%	7,321 100%	6,816 93%	7,055 96%
Management of (Nonwilderness) Undeveloped Areas	Retain existing undeveloped area/ acres of undeveloped area remaining after 15 years	467,700 100%	360,300 77%	331,800 71%	311,500 67%	358,800 77%	358,800 77%

1/ Alternative A cannot be implemented without change to Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ The site is prepared to facilitate natural regeneration of the timber stand.

4/ No funds are spent to achieve reforestation, per se. Reforestation is assisted through the normal logging practices and treatment of fuels created by timber harvest.

5/ Volume generated in excess of what an identical alternative without a minimum timber harvest level would have generated. This indicates an increased possibility of below-cost timber sales.

Table S-1
RESPONSE TO ISSUES, CONCERNS, OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE
AVERAGE ANNUAL FIGURES

(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	D	E	F	G	H
Timber Production	Maintain or increase timber production/ timber offered for sale	MMCF MMBF 28.6 159	MMCF MMBF	MMCF MMBF	MMCF MMBF	MMCF MMBF	MMCF MMBF
	Sawtimber (Allowable Sale Quantity)						
	Dec 1		30.2 149	29.1 145	21.5 100	25.5 127	25.2 123
	Dec 2		30.2 157	29.1 147	21.5 109	25.5 140	25.2 126
	Dec 5		30.2 159	29.1 131	21.5 115	25.5 130	25.2 132
	Total wood fiber including sawtimber (MMCF) in Dec 1	43.2	43.5	42.1	32.4	37.5	37.1
	Allowable sale quantity in excess of maximum efficiency in Dec 1 2/		6.8 32	6.2 29	10.4 39	0 1/ 4	2.7 10
	Reforestation Dec 1						
	Acres Planted	2,407	3,885	3,232	6,549	3,627	4,568
	Acres of Site Preparation Only 3/		1,565	1,277	2,689	1,467	1,835
	Acres Not Treated 4/		9,419	10,569	10,801	9,015	10,560
	Total Acres		14,869	15,078	20,039	14,109	16,963
	Precommercial Thinning Dec 1		7,500	8,100	1,400	4,900	5,400
Transportation System Management	Minimize new road construction/miles of road in 2030	9,300 100%	11,239 121%	11,179 120%	10,536 113%	11,030 119%	10,904 117%
	Miles of road open to public use	7,325 100%	7,035 96%	6,983 95%	5,617 77%	6,890 94%	6,791 93%
Management of (Nonwilderness) Undeveloped Areas	Retain existing undeveloped area/ acres of undeveloped area remaining after 15 years	467,700 100%	355,300 76%	467,700 100%	400,000 86%	346,600 74%	358,800 77%

1/ On a maximum efficiency basis this alternative would schedule 1.0 MMCF more but 4 MMBF less. The difference is due to harvesting material with different board foot/cubic foot conversion ratios.

2/ Volume generated in excess of what an identical alternative without a minimum timber harvest level would have generated. This indicates an increased possibility of below-cost timber sales.

3/ The site is prepared to facilitate natural regeneration of the timber stand.

4/ No funds are spent to achieve reforestation, per se. Reforestation is assisted through the normal logging practices and treatment of fuels created by timber harvest.

Table S-1 (Continued)

RESPONSE TO ISSUES, CONCERNS, OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE

AVERAGE ANNUAL FIGURES

(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	A 1/ (Current Direction)	B (RPA)	B-dep 2/ (FPFO)	C (Proposed Action)	C-dep
Local Economy	Maintain economic stability of local communities/ First Decade						
	- Jobs 3/	3,633	3,526	3,757	3,995	3,580	3,991
	- Personal Income MM$ 4/	60.0	56.7	61.3	66.2	57.7	66.0
	- Payments to Counties MM$5/	3.678	4.370	5.027	4.614	4.483	5.318
Livestock Production	Maintain or increase forage available to domestic livestock/ Animal unit months	186,000	186,000	207,000	227,000	207,000	207,000
Old-Growth Forest	Maintain existing old-growth forest/levels meeting Regional old-growth definition (long-term)	173,029 100%	149,450 86%	143,289 83%	132,831 77%	161,479 93%	157,737 91%
Minerals	Maximize opportunities for mineral exploration and extraction/acres of known mineral potential available for unrestricted mineral entry	189,400	189,400	205,400	205,400	195,000	195,000
Wildlife Production, Deer and Elk	Maximize big game habitat effectiveness/elk numbers (Decade 2)	20,960	20,820	19,890	19,900	20,380	20,380
	Elk numbers as a percent of State management objectives	100	99	95	95	97	97

1/ Alternative A cannot be implemented without change to Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ Jobs include part time and full time, temporary and permanent positions with no differentiations. Includes direct, indirect, and induced employment.

4/ Represents employee compensation from direct, indirect, and induced employment. MM$ = Million 1982 dollars.

5/ Funds remitted local governments based on gross Federal receipts. MM$ = Million 1982 dollars.

Table S-1 (Continued)

RESPONSE TO ISSUES, CONCERNS, AND OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE
AVERAGE ANNUAL FIGURES
(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	D	E	F	G	H
Local Economy	Maintain economic stability of local communities/ First Decade						
	- Jobs 3/	3,633	3,657	3,590	3,064	3,381	3,339
	- Personal Income MM$ 4/	58.6	59.2	58.0	47.5	53.8	53.0
	- Payments to Counties MM$5/	3.678	4.675	4.643	3.231	4.189	3.928
Livestock Production	Maintain or increase forage available to domestic livestock/ Animal unit months	186,000	212,000	181,000	159,000	186,000	177,000
Old-Growth Forest	Maintain existing old-growth forest/levels meeting Regional old-growth definition (long-term)	173,029 100%	158,269 91%	166,753 86%	174,631 101%	150,574 87%	161,931 94%
Minerals	Maximize opportunities for mineral exploration and extraction/acres of known mineral potential available for unrestricted mineral entry	189,400	195,000	183,200	190,200	205,400	195,000
Wildlife Production, Deer and Elk	Maximize big game habitat effectiveness/elk numbers	20,960	20,050	20,100	21,550	19,910	20,380
	Elk numbers as a percent of State management objectives	100	97	96	103	95	97

1/ Alternative A cannot be implemented without change to Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ Jobs include part time and full time, temporary and permanent positions with no differentiations. Includes direct, indirect, and induced employment.

4/ Represents employee compensation from direct, indirect, and induced employment. MM$ = Million 1982 dollars.

5/ Funds remitted local governments based on gross Federal receipts. MM$ = Million 1982 dollars.

Table S-1 (Continued)
RESPONSE TO ISSUES, CONCERNS, AND OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE
AVERAGE ANNUAL FIGURES
(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	A 1/ (Current Direction)	B (RPA)	B-dep 2/ (FPFO)	C (Proposed Action)	C-dep
Recreation Diversity	Maintain or enhance the diversity of recreational opportunities/acres by Recreation Opportunity Spectrum (ROS) class:						
	Nonwilderness						
	Primitive at year 2030	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%
	Semiprimitive Nonmotorized	269,000 3/ 100%	171,700 64%	126,800 47%	126,800 47%	154,700 58%	154,700 58%
	Semiprimitive Motorized	260,200 3/ 100%	148,600 57%	128,600 49%	128,600 49%	149,900 58%	149,900 58%
	Roaded Natural	985,600 100%	1,174,300 485%	1,279,500 529%	1,279,500 529%	1,215,200 502%	1,215,200 502%
	Roaded Modified	242,100 100%	262,300 27%	222,000 23%	222,000 23%	237,100 24%	237,100 24%
	Rural	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%
	Wilderness						
	Primitive (Trailed)	511,000	511,000	511,000	511,000	511,000	511,000
	Semiprimitive	71,700	71,700	71,700	71,700	71,700	71,700
	Subtotal	582,700	582,700	582,700	582,700	582,700	582,700
	Grand Total	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215
Developed Recreation Use 4/							
	Thousand Recreation Visitor Days	Dec 1	------- Projected at 399 for all alternatives ------				
		Dec 2	------- Projected at 464 for all alternatives ------				
		Dec 5	------- Projected at 635 for all alternatives ------				

1/ Alternative A cannot be implemented without change to Federal legislation. It does not meet minimum management requirements for wildlife.
2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.
3/ Values for recent levels include some lands which are under contract for road construction or timber harvest. These lands are not retained in the semiprimitive ROS classes in any alternative.
4/ Includes visitor information service.

Table S-1 (Continued)

RESPONSE TO ISSUES, CONCERNS, AND OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE

AVERAGE ANNUAL FIGURES

(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	D	E	F	G	H
Recreation Diversity	Maintain or enhance the diversity of recreational opportunities/acres by Recreation Opportunity Spectrum (ROS) class:						
	Nonwilderness						
	Primitive at year 2030	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%
	Semiprimitive Nonmotorized	269,000 1/ 100%	154,700 58%	218,000 81%	205,340 76%	126,800 47%	154,700 58%
	Semiprimitive Motorized	260,200 1/ 100%	149,900 58%	178,550 69%	172,820 66%	141,668 54%	149,900 58%
	Roaded Natural	985,600 100%	1,217,600 503%	1,112,600 460%	1,157,400 478%	1,264,600 522%	1,215,200 502%
	Roaded Modified	242,100 100%	234,700 24%	246,737 25%	220,327 22%	223,832 23%	237,100 24%
	Rural	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%
	Wilderness						
	Primitive (Trailed)	242,000	242,000	242,000	242,000	242,000	242,000
	Semiprimitive	340,700	340,700	341,713	341,713	340,700	340,700
	Subtotal	582,700	582,700	582,700	582,700	582,700	582,700
	Grand Total	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215
Developed Recreation Use 3/							
	Thousand Recreation Visitor Days	Dec 1	------- Projected at 399 for all alternatives ------				
		Dec 2	------- Projected at 464 for all alternatives ------				
		Dec 5	------- Projected at 635 for all alternatives ------				

1/ Values for recent levels include some lands which are under contract for road construction or timber harvest. These lands are not retained in the semiprimitive ROS classes in any alternative.

2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ Includes visitor information service.

Table S-1 (Continued)

RESPONSE TO ISSUES, CONCERNS, AND OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE

AVERAGE ANNUAL FIGURES

(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	A 1/ (Current Direction)	B (RPA)	B-dep 2/ (FPFO)	C (Proposed Action)	C-dep
Dispersed Recreation Use 3/	Thousand Recreation Visitor Days	1,144					
	Dec 1		1,251	1,246	1,237	1,248	1,242
	Dec 2		1,445	1,429	1,429	1,437	1,437
	Dec 5		1,967	1,947	1,935	1,959	1,959
Economic Efficiency	Returns to Federal Treasury 4/	8.8					
	Million Dollars Dec 1		12.1	15.5	10.3	12.8	14.2
	Million Dollars Dec 2		12.4	16.3	18.1	13.4	11.9
	Present Net Value 5/ Million Dollars		556	629	468	598.2	586
	Benefit/Cost Ratio 6/		2.12	2.26	1.75	2.26	2.17
	Budget 7/ Million Dollars	23.1	20.7	22.3	27.9	21.7	25.8

1/ Alternative A cannot be implemented without change to Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ Includes wilderness recreation and recreation related to wildlife and fish.

4/ Cash receipts for Forest outputs--remitted to the U. S. Treasury.

5/ Present Value of Benefits less the Present Value of Costs. Includes all outputs and costs to which dollar values have been assigned (whether the values and costs were derived from market transactions or not). A 4 percent discount rate was used for the 150-year period of analysis.

6/ Present Value of Benefits divided by the Present Value of Costs. The result is normally expressed as a ratio of dollars returned per single dollar expended. A benefit cost ratio of 1.4 means that $1.40 is expected to be returned for every dollar of expenditure. A 4 percent discount rate was used for the 150-year period of analysis.

7/ Recent level is the average of the period 1980-1983. Includes all costs identified in the Forest's Unit Summary Report, regardless of funding source. Includes Purchaser Credit road work (as did the recent levels). Starting in FY 1985 this money was retained in the Regional Office until distribution is needed and therefore is not normally included in Forest budget proposals.

Table S-1
RESPONSE TO ISSUES, CONCERNS, OPPORTUNITIES, AND SUMMARY CHARACTERISTICS BY ALTERNATIVE
AVERAGE ANNUAL FIGURES
(Dec = Decade of Plan Implementation; Decade 1 = 1986-1995)

Issue	Goal/Comparative Factor	Recent Levels	D	E	F	G	H
Dispersed Recreation Use 3/	Thousand Recreation Visitor Days Dec 1	1,144	1,247	1,247	1,255	1,246	1,248
	Dec 2		1,437	1,433	1,457	1,430	1,437
	Dec 5		1,953	1,950	1,981	1,947	1,959
Economic Efficiency	Returns to Federal Treasury 4/	8.8					
	Million Dollars Dec 1		13.7	13.7	14.0	8.8	12.1
	Million Dollars Dec 2		14.1	14.9	9.6	14.7	12.6
	Present Net Value 5/ Million Dollars		598.1	606	574	651	620
	Benefit/Cost Ratio 6/		2.21	2.26	2.40	2.55	2.43
	Budget 7/ Million Dollars	23.1	22.0	21.4	18.0	18.4	18.9

1/ Alternative A cannot be implemented without change to Federal legislation. It does not meet minimum management requirements for wildlife.
2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.
3/ Includes wilderness recreation and recreation related to wildlife and fish.
4/ Cash receipts for Forest outputs--remitted to the U. S. Treasury.
5/ Present Value of Benefits less the Present Value of Costs. Includes all outputs and costs to which dollar values have been assigned (whether the values and costs were derived from market transactions or not). A 4 percent discount rate was used for the 150-year period of analysis.
6/ Present Value of Benefits divided by the Present Value of Costs. The result is normally expressed as a ratio of dollars returned per single dollar expended. A benefit cost ratio of 1.4 means that $1.40 is expected to be returned for every dollar of expenditure. A 4 percent discount rate was used for the 150-year period of analysis.
7/ Recent level is the average of the period 1980-1983. Includes all costs identified in the Forest's Unit Summary Report, regardless of funding source. Includes Purchaser Credit road work (as did the recent levels). Starting in FY 1985 this money was retained in the Regional Office until distribution is needed and therefore is not normally included in Forest budget proposals.

Table S-2
MANAGEMENT AREA ACREAGES BY ALTERNATIVE

Management Strategy		A (Current Direction) 1/	B (RPA), B-dep	C, C-dep, H	D	E	F	G
1		426,130	888,165	656,355	834,336	762,930	0	873,267
2		0	357,726	0	0	316,014	0	357,726
3		712,388	0	464,937	349,639	0	442,831	0
4	Wilderness	582,700	582,700	582,700	582,700	583,713	583,713	582,700
5	Phillips Lake Area*	4,967	4,967	4,967	4,967	4,967	4,967	4,967
6		124,805	62,543	110,924	108,464	225,116	152,712	77,441
7	Wild and Scenic River	0	0	6,283	6,283	8,203	19,135	0
8	HCNRA Snake River Corridor*	14,355	14,355	14,355	14,355	14,355	14,355	14,355
9	HCNRA Disp. Rec./Nat. Veg.*	161,078	161,078	161,078	161,078	161,078	161,078	161,078
10	HCNRA Forage *	128,009	128,009	128,009	128,009	128,009	128,009	128,009
11	HCNRA Disp. Rec./Tmbr. Mgt.*	75,366	75,366	74,866	74,866	74,866	74,866	75,366
12	Research Natural Areas	974	12,960 (11,960) 2/	14,560 (13,360)	14,560 (13,360)	14,560 (13,360)	14,560 (13,360)	12,960 (11,960)
13	Homestead Further Planning Area 3/ *	5,733	5,733	5,733	5,733	5,733	5,733	5,733
14	Starkey Exp. For. & Range*	27,051	27,051	27,051	27,051	27,051	27,051	27,051
15	Old-Growth 4/	76,919	28,184	38,196	38,196	23,642	40,312	28,184
16	Administrative and Recreation Sites	0	5,744	5,744	5,744	5,744	5,744	5,744
17	Utility Corridors	0	6,594	6,594	6,594	6,594	6,594	6,594
18		0	0	60,223	0	0	680,915	0
	Baker City Watershed	8,740	0	0	0	0	0	0
	Total	2,349,215						

* Denotes management areas which, because of Congressional or administrative designation, do not vary among alternatives except as needed to provide research natural areas or additions to the National Wild and Scenic Rivers System.

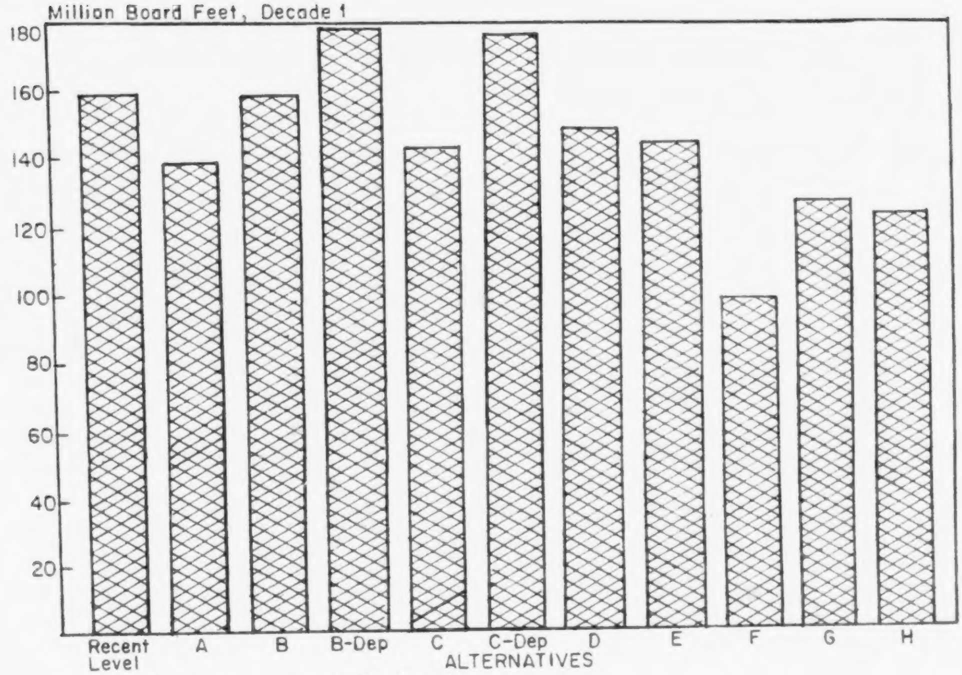
1/ Alternative A is the current direction alternative. Since this alternative is made up of numerous allocations from six unit plans, the summary and comparison of acres allocated are necessarily approximate.

2/ Figures in parentheses indicate acres within wilderness, Snake River Corridor, Dispersed Recreation/Native Vegetation, or further planning allocations.

3/ If the Homestead Further Planning Area does not become wilderness 3,708 acres would become part of Management Area 10 with the remaining acres being within Management Areas 1, 2, or 3, depending on the alternative.

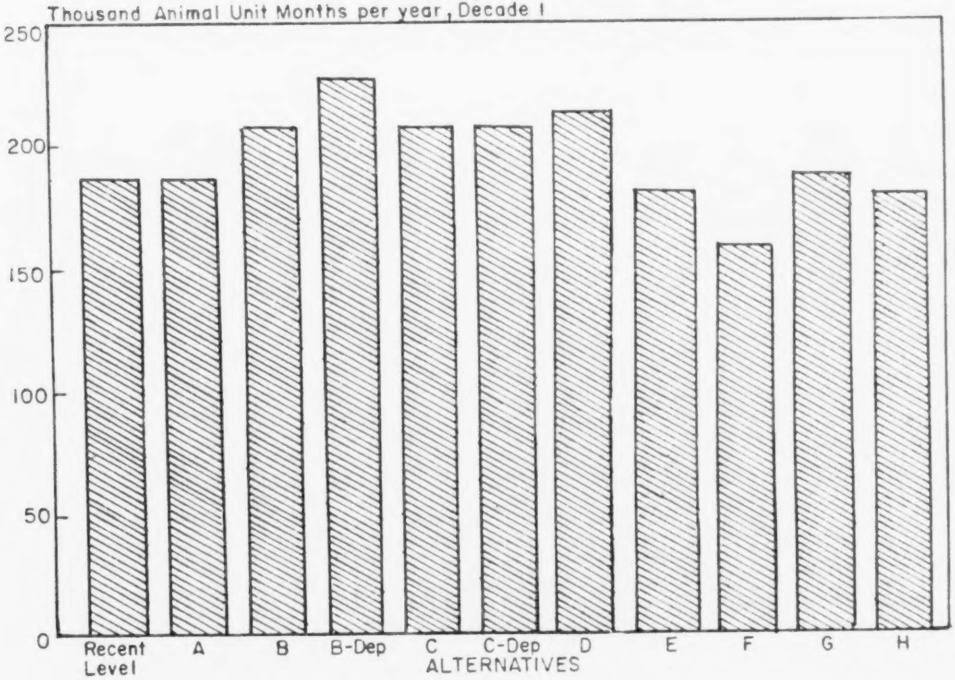
4/ Old growth in Alternative A is managed with about 28,000 acres currently in an old-growth condition. All other alternatives show dedicated old-growth, nearly all representing old-growth condition.

Figure S-2
ALLOWABLE SALE QUANTITY *
(Average Annual)



* Excludes Roundwood and Fuelwood

Figure S-3
PERMITTED LIVESTOCK GRAZING *
(Average Annual)



* Excludes Forest Service Permitted Use on Private Land.

Figure S-4

AREA OF KNOWN MINERAL POTENTIAL

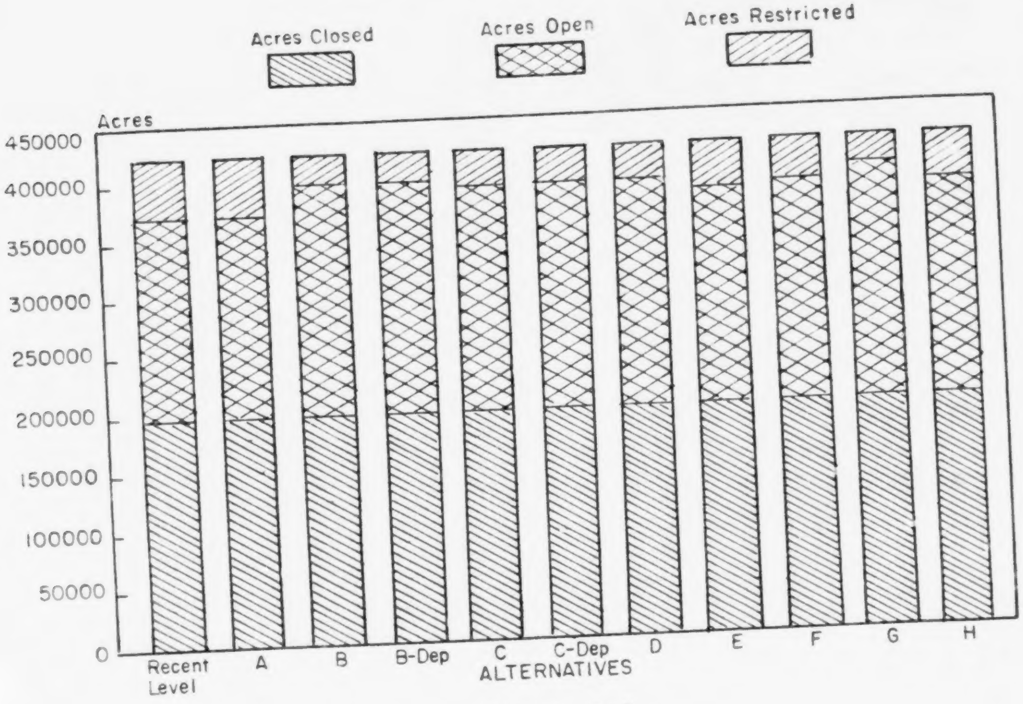


Figure S-5

ELK NUMBERS, DECADE 1

(Average Annual)

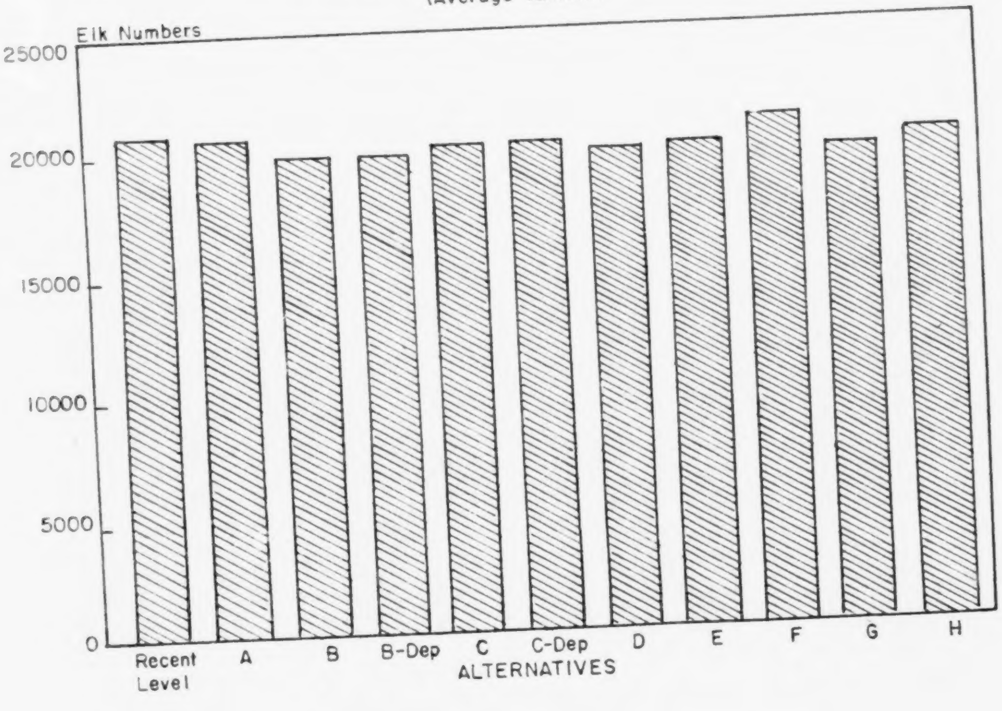


Figure S-6

LAND REMAINING UNDEVELOPED AFTER TWO DECADES
(Nonwilderness)

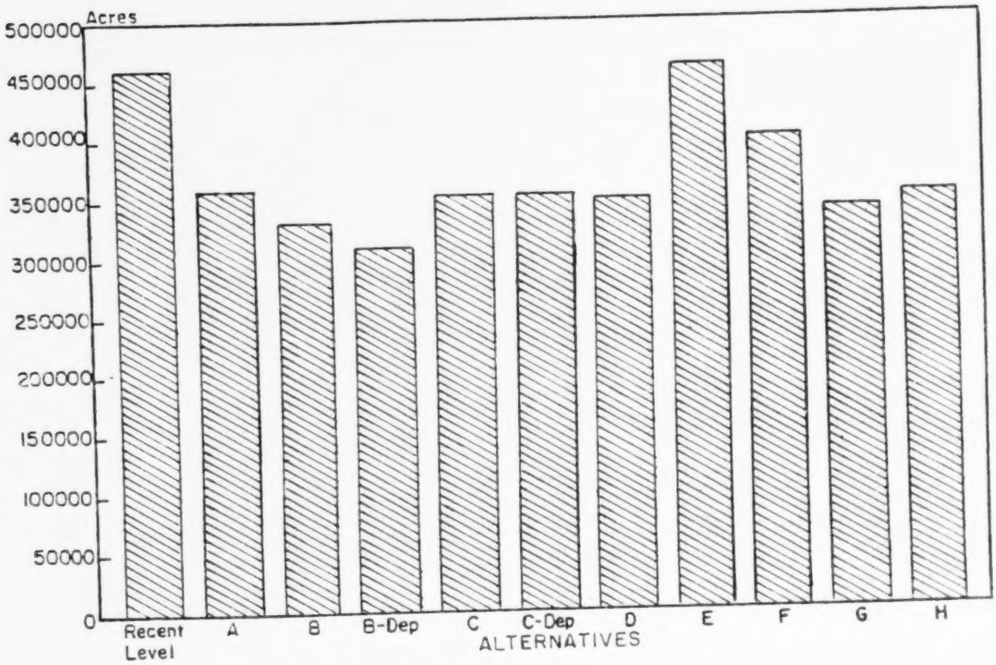
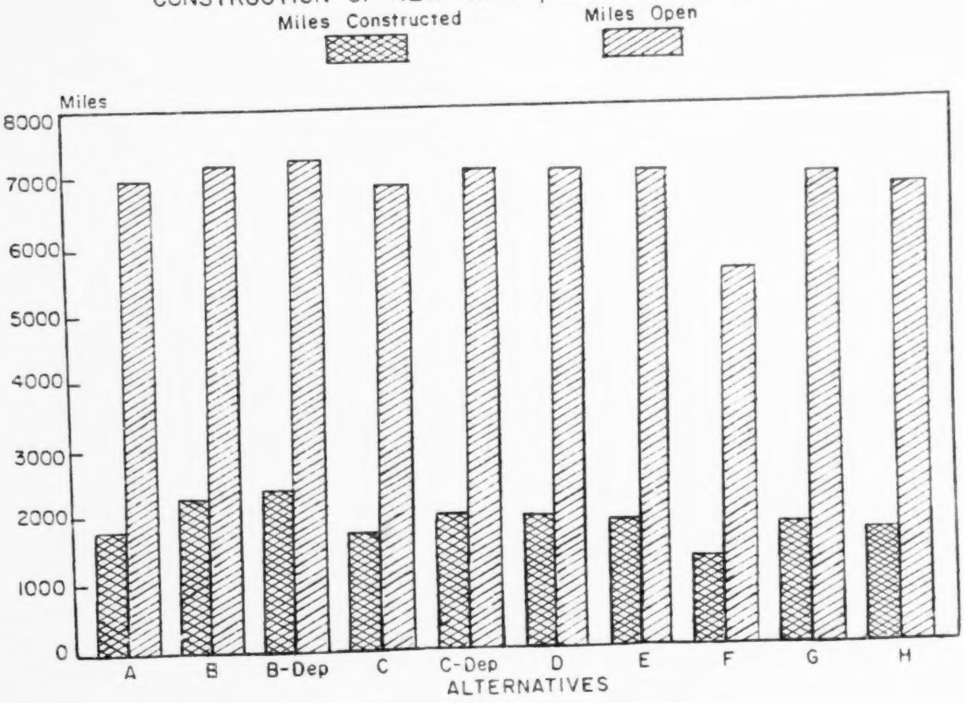


Figure S-7
CONSTRUCTION OF NEW ROADS, ROADS LEFT OPEN *



* Over the next Fifty Years.

Figure S-8

RECREATION DIVERSITY

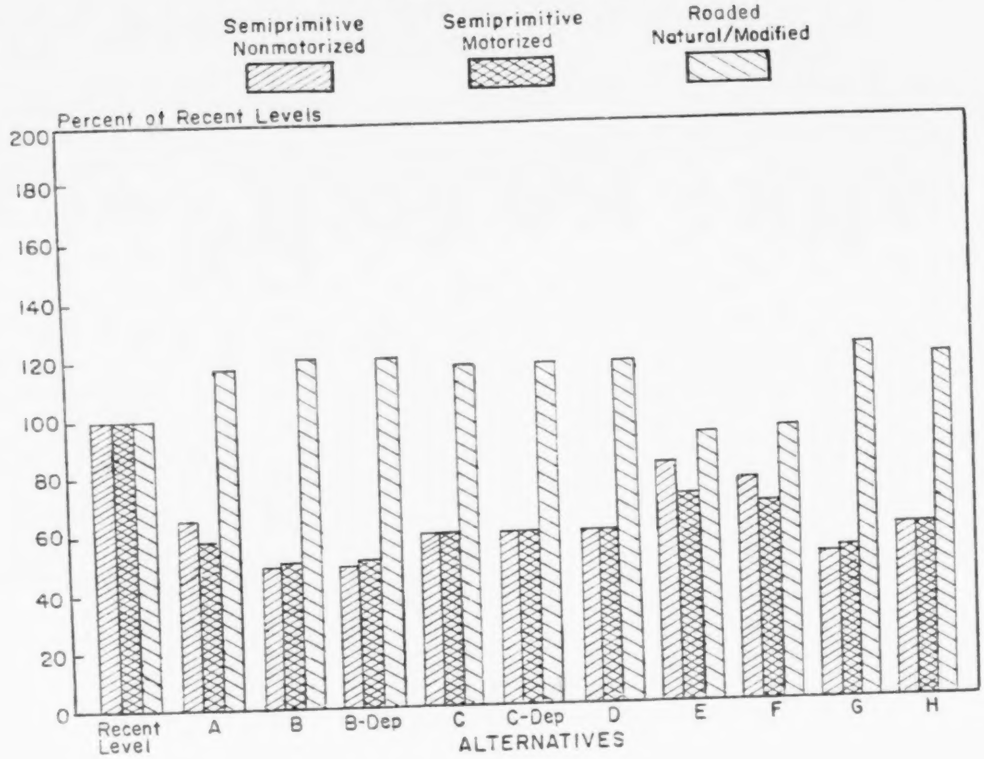


Figure S-9

PRESENT NET VALUE (PNV) AND ITS COMPONENTS

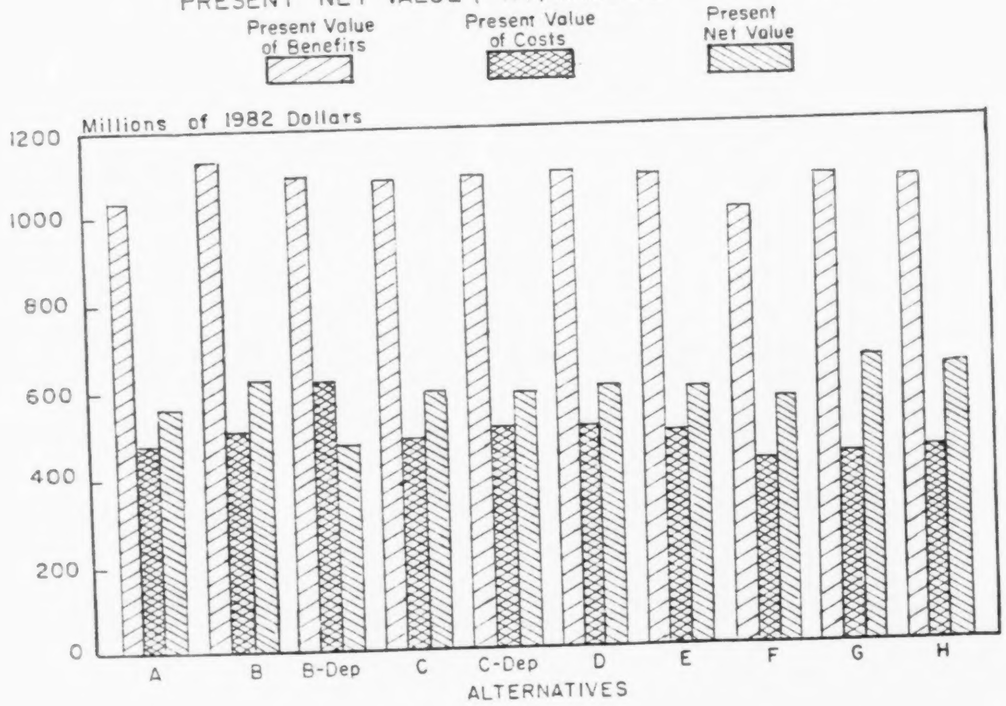


Figure S-10

PRESENT VALUE OF THE BENEFITS — ITS COMPOSITION

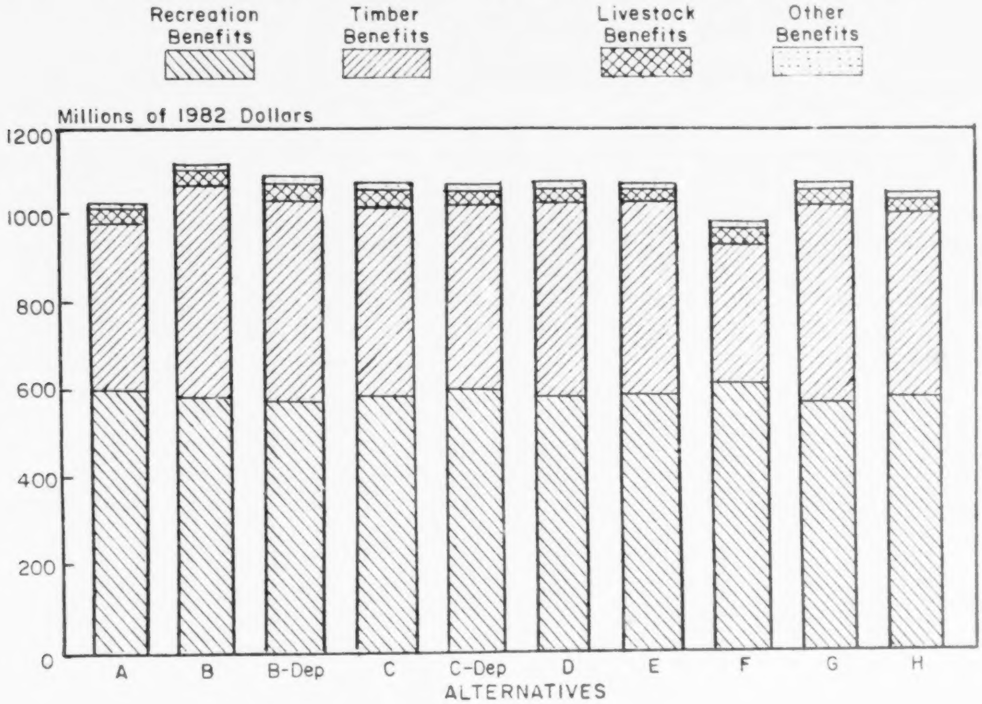
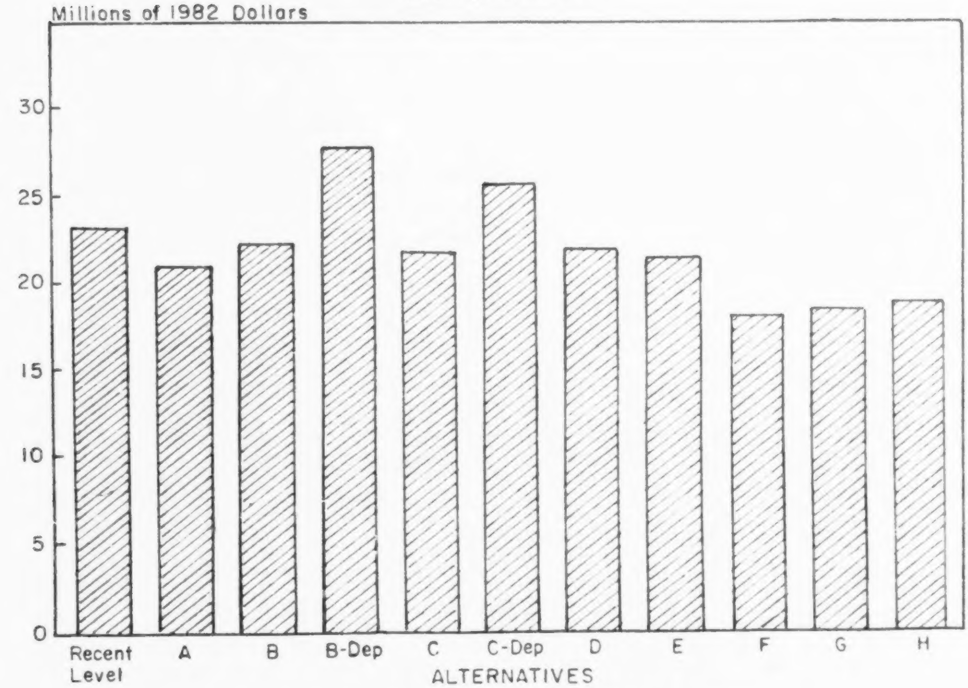


Figure S-11

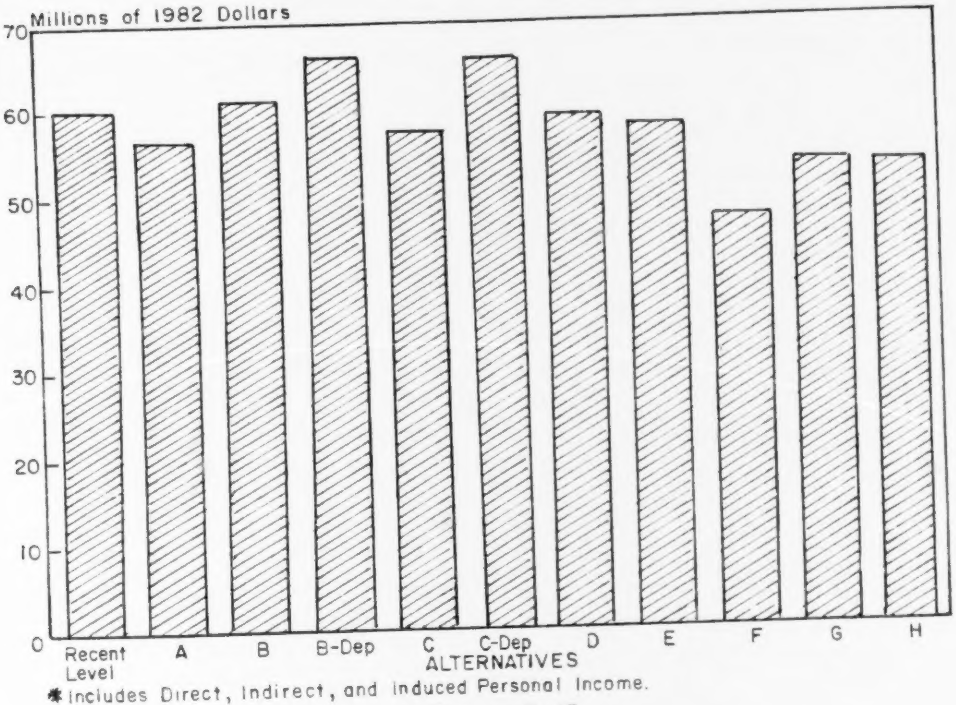
FOREST BUDGET, DECADE 1*
(Average Annual)



* includes Purchaser Credit Road Costs and all other Expenditures.

Figure S-12

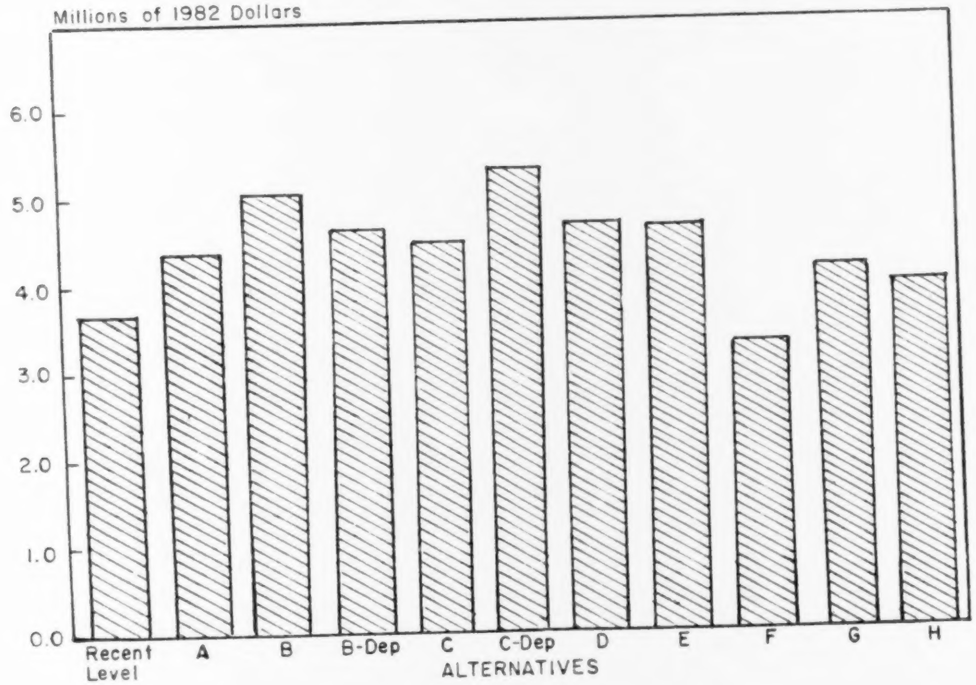
FOREST-RELATED AREA PERSONAL INCOME, DECADE 1*



*Includes Direct, Indirect, and Induced Personal Income.

Figure S-13

PAYMENTS TO LOCAL GOVERNMENTS, DECADE 1



Environmental Consequences

These brief summaries deal only with significant environmental consequences, whether direct or indirect.

Different mixes of practices in the alternatives produce different levels of resource outputs, such as recreation capacity, habitat diversity, timber production, and grazing use. The level and mix of outputs and their locations translate into varying environmental consequences by alternative. Each management area* includes standards and guidelines that provide mitigation measures to insure that long-term productivity of the land is not significantly impaired. Forest-wide standards and guidelines that apply to all prescriptions also protect the resources and mitigate adverse impacts.

Environmental consequences are the expected effects of activities scheduled to implement an alternative. They are described as quantitative or qualitative changes from the current situation in terms of significance, magnitude, and duration.

Threatened and Endangered Species

One threatened animal species, the northern bald eagle; one endangered animal species, the peregrine falcon; no threatened plants; and one endangered plant species, the MacFarlane's four-o'clock are found on the Forest at present. All are protected in all alternatives regardless of the management direction that may apply to the management area where they are found. The same protection will be afforded new threatened and endangered species that are found.

Cultural Resources

The rich cultural and archaeological history of the Forest will be protected in all alternatives. However, the possibility of damage to, as well as the discovery of, sites will be higher in alternatives which emphasize timber management.

Wetlands and Floodplains

Because of the relatively small amount of wetlands and floodplains on the Forest (less than 3 percent, most of which are floodplains) and the legal protection provided by Executive Order, these areas will be carefully managed regardless of management alternative.

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*Land to which a certain management strategy is applied. A management strategy is a mix of management prescriptions.

Prime Farmlands, Forest Lands, and Rangelands

All of the alternatives propose actions which are in keeping with the intent of the Secretary of Agriculture direction for protecting these lands.

Wilderness Establishment

Only one area (the 1,013-acre Dunns Bluff roadless area) is eligible for wilderness at this time. It is proposed for inclusion in Alternatives E and F. No wilderness is recommended for declassification in any alternative.

Utility and Transportation Corridors

All alternatives seek to recognize the Interstate 84 Highway corridor northwest of La Grande as an existing major utility corridor (greater than 600 feet in width). Other utility corridors are recognized and protected.

Areas of exclusion of power transmission facilities (wilderness), and avoidance (important recreation or research areas), vary by alternative but none are apt to create serious hardships on the movement of power throughout the area.

Minerals

There is little real difference in the effects on mineral production among alternatives now that the Oregon Wilderness Act of 1984 has been passed. However, ease of mineral exploration access varies.

Mining, especially placer mining, has a reputation of damaging water quality and streamcourses. Current laws, Forest Service administrative procedures, and sophisticated mining equipment and techniques tend to reduce these adverse effects, but some will still be present. There will be virtually no difference among alternatives in effects of mining.

Human Resource Programs

The Forest will continue to participate in these programs which vary with the economic health of the Nation. These programs provide work, training, and also benefit various resource programs such as construction of campgrounds, trail maintenance, etc.

Developed Recreation

With the exception of the Hells Canyon National Recreation Area (where additional developed capacity is needed and planned), the present 125 sites, occupying 3,900 acres, appear to be adequate through the year 2000. Developed recreation use impacts are slight because of the small amount of land involved.

Dispersed Recreation

The Forest receives over 1.1 million recreation visitor days use annually; this use is increasing. It will continue to increase regardless of the alternative selected. Most dispersed recreation activities are compatible with other resources, the primary exception being undeveloped area recreation activities which are possible only when timber harvest is restricted. The amount of undeveloped area retained varies by alternative.

Landscape Appearance

The emphasis on maintaining aesthetically pleasing landscapes varies by alternative, but some degree of emphasis is provided along the sensitive travel routes in all alternatives. The most significant conflicts with maintaining natural scenic character are with timber production.

Wild and Scenic Rivers

A variety of wild and scenic river recommendations is provided for on-Forest stream sections throughout the range of management alternatives. Maintaining the character of these streams will ensure that current recreation activities can continue, particularly those that depend upon the free-flowing nature of the streams. Conflicts arise over hydroelectric power development and timber harvest potential of the stream corridors.

Roadless Areas

Many of the Forest's 36 roadless areas are not forested and have no known mineral potential. Therefore, relatively large acreages will remain undeveloped regardless of management alternative. The range of alternatives provides for varying degrees of development through designation of all or portions to Management Area 6, which maintains the undeveloped recreation potential as the foremost objective. The most significant conflict of maintaining roadless areas is with timber production.

Livestock Grazing

A range of livestock grazing levels is provided throughout the management alternatives. Grazing is important for the red meat it provides and the support to the local economy. Livestock, when not carefully managed, cause soil compaction, reduce streambank vegetation, and contaminate streams. Water developments and salt intended for livestock provide benefits to wildlife.

Timber Management

Having greater influence on jobs, returns to local governments, and personal income than any other National Forest resource, timber production is very important to the local area as well as to the State. Timber management also has greater direct and indirect effects on other resources than any other management activity. An array of alternatives varying from 30 million cubic feet production per year to 50 million cubic feet production per year is examined in the DEIS.

Timber management has a wide variety of effects on other resources, particularly soil, wildlife, landscape and recreational experience. These effects vary proportionately with the levels of timber harvest.

All alternatives harvest timber using shelterwood, clearcut, and selection harvest methods.* These practices variously change habitats for plants and animals (both favorably and unfavorably); affect visual quality; degrade water quality; and reduce soil quality (through compaction, erosion, and fertility reduction).

All alternatives other than Alternative G are anticipated to have below-cost sales because they have been constrained to provide timber harvests at levels in excess of those which efficiency alone would indicate. This was done to provide employment in response to the local economy issue.

Wildlife and Fish

On the Wallowa-Whitman, fish and wildlife are generally more affected by the management of other National Forest resources than by direct efforts to manage the wildlife. Most alternatives seek to continue the improvement of fish habitat in order to restore anadromous fish runs. Important game species, especially deer and elk, are afforded some degree of protection in all alternatives but their management is emphasized in certain of them. Snag and old-growth tree habitat, important to many species of wildlife, is provided at varying levels throughout the range of alternatives. Wildlife provides a great deal of recreation enjoyment throughout the Forest. However, they (elk in particular) also impact private lands.

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*Shelterwood - A "shelter" of trees is left while new trees are becoming established. The shelter trees are usually removed within ten years.

Clearcut - Harvesting virtually all trees in one cutting from areas up to 40 acres in size.

Selection - Periodic cutting of selected trees from a stand. The stand's appearance is relatively unchanged after harvesting occurs.

Old-Growth Forest

Old-growth is preserved to maintain associated recreational experiences, wildlife habitat, genetic diversity, and old-growth ecosystems. It is not scheduled for timber harvesting, but harvest may occur in the event of catastrophic loss of old-growth characteristics. The amount of old-growth varies by alternative. Old-growth management results in loss of timber production.

Fire and Fuel

It is intended that wildfire will be promptly controlled and extinguished in all alternatives. Prescribed fire will be increasingly used as a management tool. Fire can have a variety of beneficial, as well as detrimental effects, and knowledge of these effects is essential for its most effective use.

Pest Management

Investment in forest insect pest control will vary with the amount of land intensively managed for timber production. The Forest will continue to cooperate with counties in control of noxious weeds, regardless of the alternative selected.

Research Natural Areas (RNA's)

Research natural areas preserve areas for the purpose of research. Because areas so selected on the Forest comprise little land, little timber, and little grazing, the consequences of their designation are minimal, regardless of the alternative selected.

Energy

With the exception of fuelwood gathering and livestock grazing, Forest activities generally consume more energy than they generate. All alternatives cause more energy to be expended than is generated.

Social Consequences

Social consequences can be seen from the viewpoints of those whose livelihoods depend on Forest production of timber and other commodities and those whose livelihoods and lifestyles depend on the Forest's amenities. Naturally there is considerable overlap. Many engaged in timber processing also enjoy recreation in areas where timber harvest is precluded. Those in the local area who are critical of timber harvesting nevertheless benefit from timber receipts which form the basis for payments for area schools and roads.

Community cohesion relates to the ability of the area's inhabitants to work together. Selection of an alternative viewed as extreme by any group disrupts its system of attitudes, beliefs, values; polarizes its members; and thus lessens any sense of community cohesion.

Out-of-area recreationists, Native Americans, and racial minorities all have particular interests in the management of the Forest which need to be addressed.

Adverse Environmental Effects Which Cannot Be Avoided Should the Proposal Be Implemented

Timber harvesting and related road building will cause changes in the Forest appearance which cannot be avoided. Soil will be impacted through compaction or displacement. Old-growth timber will be reduced and undeveloped areas will shrink. These are effects which cannot be totally avoided or mitigated and will be considered adverse by many Forest users.

Relationship Between Short-term Uses of Man's Environment and Enhancement of Long-term Productivity

Livestock grazing and industrial machinery may affect long-term soil productivity. Roads remove land from productivity in the long-term.

Irreversible and Irretrievable Commitments of Resources

The proposal will provide for mineral removal, expenditure of energy and roading of roadless areas, making them ineligible for wilderness consideration. These are the prominent examples of irreversible and irretrievable uses or changes.

Chapter I

PURPOSE AND NEED

INTRODUCTION

The purpose of the Forest Land and Resource Management Plan is to provide for multiple use and sustained yield of goods and services from the National Forest in a way that maximizes long-term public benefits in an environmentally sound manner. This environmental impact statement discloses the environmental effects of the proposed plan and the alternatives considered. Addressing public issues and management concerns are key to accomplishing this purpose.

This Draft Environmental Impact Statement (DEIS) discloses ten alternatives, including an alternative identified as the preferred alternative, (which is the "proposed action"). These ten alternatives are alternative ways of managing the land and resources of the Wallowa-Whitman National Forest. This DEIS also describes the environment which would be affected, and the environmental consequences of implementing each of the alternatives. The ten alternatives are developed and evaluated against the 50-year Resource Planning Act horizon, with effects of timber management assessed through a 150-year horizon to ensure long-term feasibility of proposed programs.

Each alternative furnishes a different way to address local, regional, and National public issues and management concerns, provides for use and protection of resources, and fulfills legislative requirements. Every alternative generates a different mix of goods and services from the Forest. Each alternative was evaluated to determine its potential to provide a sustained yield of goods and services in a way that maximizes long-term benefits in an environmentally sound manner. The preferred alternative is the alternative which, in the considered opinion of the Forest Service, provides for a level of multiple uses, goods, and services that maximizes long-term net public benefits in an environmentally sound manner.

The preferred alternative is the basis for the accompanying "Proposed Wallowa-Whitman National Forest Land and Resource Management Plan" (Proposed Forest Plan) document. The purpose of the Forest Plan is to direct and guide all natural resource management activities on the Wallowa-Whitman National Forest. Preparation of the proposed Forest Plan is required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), plus the associated National Forest System Land and Resource Planning Regulations (36 CFR 219).

The preparation of an environmental impact statement disclosing a preferred alternative and alternatives to it is required by the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality NEPA regulations (40 CFR 1500), and the implementing regulations of NFMA (36 CFR 219).

For the purposes of disclosure under NEPA, this DEIS and accompanying proposed Forest Plan are treated as combined documents.
The environmental impact statement is required because the Forest Plan is a major Federal action with a significant effect on the quality of the human environment. Its purpose is to provide decisionmakers with an environmental disclosure sufficiently detailed to aid in the selection of management direction for the Forest. Equally important, its purpose is to make information of the alternatives' environmental impacts available to the public, and to encourage public participation in the development and refinement of that information.

The Forest Plan supersedes all previous land management plans prepared for the Wallowa-Whitman National Forest with the exception of the Comprehensive Management Plan for the Hells Canyon National Recreation Area which is adopted and incorporated (36 CFR 219.2). Those plans superseded are the Wallowa Valley, Elgin, Grande Ronde, Burnt Powder, and Desolation Unit Plans. Upon implementation, all subsequent plans and activities affecting the Forest, including budget proposals, will comply with the Forest Plan. In addition, all permits, contracts, and other instruments for the use and occupancy of National Forest System lands and resource uses must be consistent with the Forest Plan. When changes are necessary, they will be made as soon as practicable, subject to existing rights.

NATIONAL, REGIONAL AND FOREST PLANNING

As required by RPA, NFMA, and the related implementation regulations cited, the Forest Service has a three-level, integrated, planning process. At the National level, the RPA Program establishes long-range resource objectives based on the present and anticipated supply of and demand for various resources. A portion of each National resource objective included in the RPA Program is distributed to each of the nine Forest Service Regions in the Nation.

At the Regional level, a Regional Guide is developed which presents the distribution of its portion of the National objective of each Forest. In addition, the Regional Guide establishes Regional management standards and guidelines. The Pacific Northwest Regional Guide of May 1984, provides this direction for the Wallowa-Whitman National Forest.

At the National Forest level, a proposed Forest Plan is prepared. A range of resource objectives are considered as alternatives; one or more of these alternatives incorporates the tentative RPA Program resource objectives displayed in the Regional Guide.

The planning process is continually repeating in that the information from the Forest level flows up to the National level, is incorporated in the RPA Program, and then flows back to the Forest level. The RPA Program and Regional Guide are updated every five years. The Forest Plan is reviewed every five years, and is ordinarily revised on a ten-year cycle. It is revised at least every 15 years. It also may be revised whenever conditions or demands in the area covered by the Forest Plan change significantly. This process ensures that the Forest Plan is responsive to changing conditions.

The planning process specified in the NFMA implementing regulations and the environmental analysis process specified in the CEQ regulations were used in developing this DEIS and the accompanying Proposed Forest Plan. The planning steps employed are:

1. Identification of purpose and need
2. Planning criteria
3. Inventory data and information collection
4. Analysis of the Management Situation
5. Formulation of alternatives
6. Estimated effects of alternatives
7. Evaluation of alternatives
8. Preferred alternative recommendation
9. Plan approval
10. Monitoring and evaluation

The environmental analysis is documented in this DEIS. It ensures that environmental information is available to public officials and citizens before decisions are made and before actions are taken.

All of the documents and files that chronicle the Forest planning process, including the environmental analysis, of the Wallowa-Whitman National Forest, are available for review at the Supervisor's Office, Federal Building, 1550 Dewey Street, Baker, Oregon 97814. These documents and files, known as planning records, contain the detailed information and decisions used in developing this DEIS and the Proposed Forest Plan. The planning records are incorporated at appropriate points in the text and appendices of this DEIS in the Proposed Forest Plan.

This DEIS and the Proposed Forest Plan are being circulated for review and comment. Some planning steps may be repeated if necessary to respond to public comment. The resulting Final Environmental Impact Statement (FEIS) will be used by the Regional Forester to make a decision regarding approval of the Forest Plan. This decision will be documented in a Record of Decision which will be available to the public.

The link between the Forest Plan and on-the-ground accomplishment is provided through functional plans or project plans that are tiered to the Forest Plan. Functional plans may include the Forest Travel Plan, Forest Transportation Plan, Fire Management Plans, etc. Project plans will be tiered directly to the Forest Plan or to the functional plans. Projects include such things as recreational developments, road construction projects, timber sales; any on-the-ground action. Most functional and project plans are subject to NEPA requirements and utilize an environmental analysis approach similar to that of the Forest Plan. They may or may not include an environmental report such as an environmental impact statement or environmental assessment. Planning for projects of a routine nature or with only minimal effects, may be excluded from documentation.

The Forest Plan, therefore, may be considered an umbrella plan to which all other plans are tiered. Tiering means that the environmental documents for subsequent narrower (more site-specific) environmental analyses may incorporate the more general information from the Forest Plan Environmental Impact Statement by reference and concentrate more directly on the issues specific to the document being prepared (40CFR 1508.28).

A glossary defining terms, units, and abbreviations is located in the back of this document, preceding the index. A list of references cited in the DEIS is provided. The reader will find it useful to consult the land management allocation map for each alternative when reviewing this DEIS. The maps are in a separate envelope accompanying this DEIS.

OVERVIEW OF THE FOREST'S LOCATION

The administrative area of the Forest* includes approximately 2.3 million acres in Oregon and Idaho. Neighboring National Forests are the Umatilla and Malheur in Oregon and the Nezperce and Payette in Idaho. A map showing the location can be found in the Summary near the front of this document.

Interstate Highway 84 bisects the Forest, providing rapid access from population centers of Portland (300 miles to the west) and Boise (150 miles to the east). A major east-west railway also passes through the Forest.

The Forest contains nearly 600,000 acres of wilderness including the Eagle Cap Wilderness which, at 346,000 acres, is the largest in Oregon. The Forest also contains the Hells Canyon National Recreation Area, with the famous Hells Canyon of the Snake River, which at over a mile in depth, is the deepest canyon on the North American continent.

Prominent geographic features within the Forest are the Wallowa, Elkhorn, and Seven Devils Mountain Ranges, Hells Canyon and Snake River. A dozen important streams originate on the Forest including the Grande Ronde, Imnaha, and North Fork John Day Rivers. Numerous communities lie adjacent to the Forest with La Grande, Enterprise, and Baker being the larger population centers. Timber and agriculture are the backbone of the local economies. A more complete description of the Forest and surrounding area may be found in Chapter III.

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*Throughout this document, the terms "Forest" and "Wallowa-Whitman" are used to reference the area administered by the Wallowa-Whitman Forest Supervisor. It includes the Wallowa, the Whitman, and portions of the Nezperce and Payette National Forests.

ISSUES, CONCERNS AND OPPORTUNITIES

An important step in the planning process is the identification of major public issues and management concerns. This was accomplished through an extensive scoping process involving the public, other agencies, and a panel of non-Forest Service citizens representing a cross-section of State and local governments, local industry, conservation groups, and Native Americans. The citizens' panel also reviewed and contributed to the planning effort at other stages, including development of alternatives. Separate meetings with several individual agencies were held. There was special effort to ensure coordination with county land use plans. In addition, the 1,460 private landowners who own land adjacent to or within the National Forest were contacted by mail, informed of the planning effort, and asked to notify the Forest with their concerns. Many of them accepted this invitation.

The 1,100 people on the Forest Plan mailing list were contacted by mail on two occasions in order to identify issues and determine which were most significant. The response from these mailings and the evaluation of the public comments are available for review at the Forest Supervisor's office.

Following are the major issues identified, the related concerns, and opportunities. In reviewing the remaining sections of this statement, the reader should keep these issues and concerns in mind. An important test of any alternative action is how well it deals with or resolves these key issues and concerns. The process of identifying issues, concerns, and opportunities is described in more detail in Appendix A.

Transportation

Approximately 9,300 miles of roads in various conditions exist on the Wallowa-Whitman, at densities ranging from less than one to more than ten miles of road per square mile of land. A dominant theme in public response on the issue of transportation system management has been a concern over the miles of road on the Forest, and the standards to which these roads are built. Environmental groups and individuals express concern that impacts of road construction on fisheries, wildlife, and other resources are directly related to the miles of roads and the number of roads open or closed to motor vehicle use. Timber purchasers are concerned that unnecessary roads and excessively high road standards not only take land out of production but also increase logging costs.

The construction, use, and maintenance of roads affect many other Forest resources including visual quality, backcountry recreation, riparian habitat, water quality, wildlife habitat, soils, range, and timber. Proper location, design, construction, and management can mitigate many of the adverse impacts, but the construction of a road or trail is a long-term resource commitment and a physical feature which is not easily returned to a natural state. Many of the possible mitigative actions (e.g., lower standards, closures, reduced road densities) limit public access. Some actions (such as lower standards) may reduce logging costs while others may increase costs (closures or reduced road densities). The character of many roadless areas will be irretrievably altered by the decision to access them for timber management, but without the additional roads timber production will be reduced.

In summary, to deal with the transportation issues, the following questions must be addressed:

1. How much road access do people want, are the roads needed, and are they economically efficient?
2. How do we best provide the access needed for timber management while minimizing the impact of these roads?
3. How do we most efficiently satisfy recreation and wildlife objectives considering road systems already in place and those which are determined to be necessary for the development of the timber resource?

Timber Production

The Forest contains large amounts of softwood timber. The primary timber-producing species are ponderosa pine, Douglas-fir, lodgepole pine, true firs, western larch, and Engelmann spruce. Ponderosa pine has generally been in greater demand, has been more accessible, and through history has been harvested at a more rapid rate than the other species. Lodgepole pine, for example, was virtually ignored until the 1970's. As a result, ponderosa pine comprised 35 percent of the standing timber inventory in 1958, but now comprises only approximately 23 percent of the inventory.

The average size of trees harvested has declined as more lodgepole pine has entered the mix. As timber stands are brought under management, trees of all species will be harvested at relatively young ages (50 to 100 years) if wood fiber production is to be maximized. This will also contribute to the production of smaller log sizes than have been available in the past.* Many local mills are best suited for the processing of larger logs. Most would benefit from maintaining or increasing the sale of larger, more valuable species in the short-term. This would allow for fuller utilization of present equipment and more time for conversion to equipment suitable for smaller materials. Maintaining or increasing sales of larger trees now would maintain or increase short-term returns to the U. S. and local governments, but would also result in reduced future returns.

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*Longer rotation ages could be used to sustain a larger product size, but would require the Forest to ration large sawtimber over a longer period, reducing harvest levels.

Timber harvesting and management have direct and indirect effects on other resources. Forage production is frequently increased, but wildlife cover is often reduced, especially in the short run. Old-growth habitat is reduced. Recreational opportunities are changed and visual qualities are altered. The location and scheduling of future timber harvest units will have significant short- and long-term implications on the abundance and distribution of cover and forage areas for wildlife, the visual quality and recreational settings provided, and the returns to the U. S. and local treasuries.

The Forest has been assigned an annual timber sale target of 220 million board feet as its share of the projected National need for the next decade (Regional Guide 1984). This is known as the Forest's share of the Resource Planning Act (RPA) target.* Recent offerings have averaged 210 MMBF. Achieving the RPA target would require a five percent increase in sell volume.

Another management concern is the incidence of below-cost timber sales on the Forest. The Forest is attempting to respond to the issue through a program of rigorous project-level economic analyses. The ability to recover costs on individual sales was a specific criterion only in Alternative G. It was not a criterion for any other alternative. Economic efficiency and attainment of nonpriced benefits in response to issues and concerns are criteria in selecting a preferred alternative. See more detailed discussion in Chapters II and III.

The Oregon Department of Forestry has identified a potential shortfall in future timber supplies in Oregon, and through its "Forestry Program For Oregon" has suggested targets for the Wallowa-Whitman National Forest which would help avoid this shortfall. These targets exceed the assigned timber production targets for the Forest by approximately 20 percent and would require a marked departure from nondeclining evenflow and greater tradeoffs in other resources. (see discussion of Alternative B-departure in Chapter II).

In summary, questions that must be answered are:

1. How much timber should be harvested from the Wallowa-Whitman?
2. What species mix?
3. What size trees?
4. What should the harvest schedule be?
5. Should there be a departure from nondeclining evenflow?
6. What is the cost to other forest resources of maintaining certain timber production levels?

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*The RPA timber target is based on the total amount of wood fiber material offered for sale, converted to board feet. See discussion under timber management in Chapter IV.

Local Economy

The economies of Baker, Union, and Wallowa Counties of northeastern Oregon are affected significantly by the activities and outputs of the Wallowa-Whitman National Forest. Forest activities also affect other area counties but to much less an extent than these three. In terms of providing employment (jobs, personal income) and payments to local governments, timber sale offerings are by far the most important consideration. The Forest provides about half of all the timber processed locally. Employment related to the harvest, processing, and cultivation of the area timber resource accounts for some 12 percent of the total labor force. Local school and road budgets rely on National Forest receipts for about 60 percent of their income.

Other Forest outputs such as forage, water, minerals, and recreation are also important to the local economy. It is estimated that the Forest provides about eight percent of total domestic livestock forage consumed. This forage is important to some 144 livestock operators. The Forest is important in affording recreational opportunities for people from throughout the Northwest. The grazing and recreation contribution to the local economy is relatively low in comparison to the contribution of timber harvest.

Many feel the Forest should be managed to boost the local economy; others feel that economic factors are no more important than amenity considerations for a National Forest. However, there seems little doubt that the effects on the local economy are important in developing a plan for managing the Forest. The question becomes:

> What should the Forest's contribution to the local economy be in terms of personal income, jobs and payments to counties?

Management of Nonwilderness Roadless Areas

Some people enjoy the recreation experience available in areas which have many of the undeveloped characteristics of wilderness but where there are fewer restrictions. Such areas can be characterized as providing semiprimitive nonmotorized or motorized recreation opportunities. Maintaining the undeveloped character would mean excluding such areas from regulated timber harvest and road construction. Offroad vehicle use could continue, as could mineral exploration and extraction (recognizing that high timber or mineral values influence whether an area would be designated for undeveloped recreation).

If the Forest is to provide a broad range of recreation experiences, it will be necessary to provide a range of conditions that includes such undeveloped areas. The issues become questions of:

1. How much nonwilderness, and which roadless areas, should be retained in an undeveloped state for opportunities they offer and for future wilderness consideration?

2. What resources will benefit and what will be the costs in resource production?

Old-Growth Forest

Old-growth tree stands, and their related undisturbed environments including snags and fallen trees, are of ecological importance to society in that they represent a stage in ecological succession which provides unique habitats for certain species of plants and wildlife. People using the Forest for recreational purposes enjoy old-growth trees for their aesthetic values. There is general agreement that some representation of old-growth timber should be maintained but wide disparity emerges when levels of representation are discussed. Conflicts arise because the existing old-growth stands contain high volumes of timber which could be made available for harvest in the near future.

The minimum levels of old-growth and mature forest necessary to satisfy NFMA requirements for viable populations of wildlife have been established for the Wallowa-Whitman National Forest (see Appendix G). They assume a high rate of habitat occupancy which depends in part on our ability to precisely recognize and manage for those features of habitat essential to wildlife, and to distribute those stands in such a way that they remain accessible to wildlife.

The questions to be resolved are:

1. What amount of old-growth is necessary to provide an acceptable level of risk in ensuring viable wildlife populations?

2. What effect will maintaining old-growth ecosystems have on local timber supplies?

3. What level of old-growth is necessary to satisfy the recreation and aesthetic desires of Forest users?

Wildlife Habitat — Deer and Elk

The Wallowa-Whitman National Forest provides habitat for more than 20,000 Rocky Mountain elk, and is widely recognized for the elk hunting it provides. Elk numbers have increased in response to favorable habitat conditions since their introduction in the 1920's. Timber harvest has "opened up" areas which were dominantly forest, providing significant increases in forage available to elk. Available cover has been surplus to elk habitat needs so that much of the past timber harvest activity has, by design or accident, improved habitat. However, significant shortages of cover exist naturally or have been caused by timber harvest on portions of the Forest. Deer and elk generally share common ranges throughout the Forest. Deer have habitat requirements similar to elk but are generally more tolerant of human activity (Thomas, et al. 1979). For this reason it is assumed that elk will serve as an adequate indicator of habitat for deer in evaluating alternative response to this issue. Current populations of deer are substantially below State objectives in both Idaho and Oregon as the result of recent severe winters.

Cover and forage relationships affect the quality of food, shelter, and security for elk. (Thomas, et al. 1979). Continued timber harvest may maintain or enhance these cover/forage relationships if rates of harvest can be limited to allow proper distribution of harvest units. Limiting the rate of harvest reduces the potential amount of timber available to local mills in the early decades.

The issue is complicated by the introduction of roads. The combination of forage, cover, and road access may ultimately influence the number of elk hunting opportunities provided on the Wallowa-Whitman National Forest.

The questions to be resolved are:

1. What mix of thermal/hiding cover and forage is desired for elk on the Wallowa-Whitman and at what cost in potential timber production?

2. What level of road access will satisfy public needs and desires while protecting elk and elk hunting opportunities?

Recreation Diversity

A variety of conditions currently exists on the Forest ranging from wilderness to lands which have been intensively managed for timber. Each of these conditions provides a different recreational opportunity. The recreation opportunities they provide are described within the "recreation opportunity spectrum" (ROS) as: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, roaded modified, rural, and urban.

While there is a surplus of capacity of most ROS classes for the foreseeable future, it appears that the demand for the semiprimitive motorized class will exceed capacity by the year 2000. This is because much of the current capacity for semiprimitive motorized is within the remaining roadless areas.

There are a variety of management choices which will change the recreation diversity within the Forest. At the heart of the issue is the question:

> What mix of Forest conditions would best satisfy projected demands for a broad range of recreation opportunities and the expressed needs and desires of the users of the Wallowa-Whitman National Forest?

Livestock Production

The National Forest has long provided forage for local livestock, thereby contributing to community stability and the Nation's need for cattle and sheep products. Approximately eight percent of the forage consumed by livestock in Baker, Union, and Wallowa Counties is provided by the Wallowa-Whitman National Forest. Overall range conditions, which were poor at the turn of the century, have improved but problem areas still exist. Particular concern is expressed over the impacts of grazing on riparian zones, soil loss, water pollution, and our ability to reforest transitory ranges. These problems may be addressed through changes in grazing systems or class of livestock, increased investment levels in range management, reduction in numbers, or a combination of the above. Opportunities may exist on some allotments to increase forage production and utilization with such changes.

The questions to be resolved are:

1. What level of investment in range management on the Wallowa-Whitman National Forest is appropriate considering local rancher and community needs, the National objectives for livestock production, and returns to the U. S. Treasury?

2. What levels of grazing are appropriate within the proposed investment levels?

3. Are such levels consistent with other multiple-use objectives, including timber production and recreation?

Minerals

A variety of minerals including gold, silver, molybdenum, copper, and limestone underlie portions of the Forest. Gold in particular is responsible for the rich mining history of the area and is responsible for the establishment of several towns. Extraction of these minerals can benefit the local economy and provide materials needed nationally. Extraction of minerals from National Forests is recognized in law and Forest Service policy as a legitimate resource use. As with most uses, there are sometimes conflicts with other resources. Mineral deposits are, for example, often located in visually sensitive areas where landscapes may be adversely altered, or near or within stream courses where water quality can be affected. There are many ways of mitigating mineral-related impacts; in most cases the impacts are still noticeable but acceptable. When such uses are not acceptable, lands are sometimes withdrawn from mineral entry. Examples are sensitive recreation or administrative sites.

In the case of wilderness, new mining claims are considered incompatible, just as is timber harvesting, because of the noticeable effects of the activities. The wilderness character is lost when such activities occur. Incompatibility with wilderness is the most important facet of the minerals issue in land management planning for public lands.

During this Forest planning process, the Oregon Wilderness Act was passed making minerals less an issue than before the 1984 Act. Convenience of mineral exploration and extraction varies with management area. Minerals is retained as an issue in order that these differences can be explained and displayed in this EIS. The question becomes:

> What if any restrictions should there be on new mineral exploration and mining beyond normal coordination requirements?

PLANNING RECORDS

In an analysis of this magnitude, there is a file of background data that is impractical to include in the Draft Environmental Impact Statement. This includes letters from the public, records of meetings, computer summaries, maps, memoranda and process records of many kinds. They are available in the Forest Supervisor's Office in Baker. A glossary is provided at the back of this document to aid the reader's understanding. Supporting detail is provided in the appendices accompanying this document.

Chapter II

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

INTRODUCTION

This chapter is the heart of the Environmental Impact Statement. In this chapter alternate ways of managing the National Forest (the alternatives) are presented and their resource outputs and environmental effects are displayed. There are also discussions of how these alternatives were developed and how they compare to each other and to the way the Forest is currently being managed.

This chapter draws on material from other chapters: Chapter III which describes the Affected Environment and Chapter IV which presents the Environmental Consequences. It also compares the alternatives to the issues discussed in Chapter I.

OVERVIEW OF CHAPTER II

There are four main parts to this chapter. First, there is a summary of the analysis that was conducted in the process of developing the alternatives. (A more detailed presentation of this analysis is presented in Appendix B, Description of the Analysis Process). Second, there is a discussion of other alternatives which were considered but were not developed in detail or presented as full alternatives. Third, each alternative is described in terms of its purpose and management emphasis. Fourth, the alternatives are compared to each other and to other information. This comparison shows the response to issues, the emphasized land uses, the resource outputs, the environmental effects, and economic costs and benefits which would occur with each alternative. Following the tables that display this information, there are tables and a narrative which describe comparative differences of the alternatives.

ALTERNATIVES

The alternatives considered in this Draft Environmental Impact Statement display different ways of managing the lands and resources of the Wallowa-Whitman National Forest. They differ from each other in the land uses and management practices which would occur on different parts of the Forest. They also differ in their schedules of management activities.

Each alternative is a unique combination of land allocations, management prescriptions, and activity schedules. As a result, each alternative would generate a different mix of goods and services for the public, and a different combination of resource outputs, land uses, and environmental effects.

An even distribution of reasonable alternatives covering a broad range of possible actions was formulated by the interdisciplinary team. The alternatives are designed to explore a variety of ways to respond to the public issues, management concerns, and resource use and development opportunities identified throughout the planning process.

The planning regulations (36 CFR 219.12(e) and (f)) require an analytic process, which includes an inspection of various minimum and maximum production levels and economic factors. In addition, the collection of alternatives must respond to management concerns, and include alternatives which reflect current and National programs, such as RPA.

Some alternatives would manage the National Forest to maximize the production of priced commodities such as timber and forage, whereas other alternatives would emphasize unpriced amenities, such as dispersed recreation, wildlife, and scenic qualities. One alternative (the no action alternative) reflects current management direction while another (the RPA Alternative) reflects the objectives of the Forest Service National program. Some alternatives (departure alternatives) have an altered timber harvesting schedule to meet specific needs. From this broad range of alternatives, the Regional Forester had a basis for identifying the alternative (the Preferred Alternative) which comes nearest to maximizing the net benefits to the public.

The maximization of net public benefits is the goal of the Forest planning process. The net public benefit is the overall value to the Nation of all outputs and positive effects (benefits) less all the associated Forest Service inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits cannot be expressed numerically because they include both quantitatively evaluated priced outputs and qualitatively valued nonpriced outputs. Conceptually, the net public benefit is the sum of the present net value of priced outputs plus the net value of all nonpriced outputs.

Priced outputs are those that have been assigned dollar values. Their quantitative values are determined by actual market transactions or by estimation methods that produce prices which approximate those determined by market transactions. Timber, forage, and minerals are examples of commodities which are bought and sold in the market. Recreation visitor days (RVD's), by comparison, are not normally exchanged via market transactions. Their market values are estimated by using some market transaction data in combination with various theoretical techniques. Conceptually, these assigned values should be consistent and comparable to those values which were actually derived via market transactions (Rosenthal, Brown, and others, 1985). Therefore, both assigned and market values are appropriate for calculating quantitative measures of efficiency such as present net value. All benefits and costs are tracked in real terms, i.e., exclusive of inflationary effects.

Nonpriced outputs are those for which there is no available market transaction evidence and no reasonable basis for estimating a dollar value comparable to market values associated with the priced outputs. Examples of nonpriced outputs include threatened and endangered species, natural and scientific areas, historical and archeological sites, scenic quality, and clean air.

"Benchmarks" are presented and discussed several times in the chapter. Benchmarks are analytic bases which were used to estimate the potential ranges of various resources, outputs and other activities. Although not necessarily implementable, they serve to define the decision space within which implementable alternatives can be developed. They were used to analyze certain relationships under special economic and resource production assumptions. Their character and use will be discussed in the next section and in Appendix B.

Alternative Development Process

Formulating a broad range of reasonable management alternatives for a National Forest is an extensive and complex process. Each alternative is a combination of land uses, Forest management activities, and schedules. Alternatives must consider the resource capabilities (both the limitations and the potentials) of the many different areas of the Forest. Each alternative is designed to manage the land to achieve specific goals and objectives. Some of these objectives, such as maintaining air and water quality, are common to all alternatives; other objectives, such as the mix and amount of resource outputs, vary among the alternatives.

By managing the Forest lands and resources in different ways, varied objectives can be achieved which respond to the issues differently, providing different combinations of public benefits. Forest management can vary by what is done, where it is done, and when it is done. These varying combinations of management activities and schedules will result in different resource outputs and environmental conditions, thus meeting the unique objectives of the alternatives.

An alternative is formulated to address issues, concerns and opportunities (process more fully described in Appendix B) by considering all of these factors:

- the resources available on different areas of the Forest;
- the public's need or demand for different combinations of commodities and amenities;
- the combination of management actions (management strategies) which are planned for different areas;
- the schedule of those activities;

- the interrelationship of capabilities, management strategies, and schedules which result in resource outputs and environmental conditions which are consistent with the objectives of that alternative.

Alternative formulation was an iterative process in which the goals and objectives of an alternative were identified, the alternative was modeled using FORPLAN (see the following section), the outputs from the model were compared to the goals and objectives of the alternative, and the effects on other resources were estimated. When the goals and objectives of the alternatives were not met or the effects were considered to be too severe, the model formulation was changed, the FORPLAN model was run again, and a new analysis was completed. Using this process, a full range of Forest Plan alternatives was developed.

The starting point for detailed alternatives was Benchmark 7. This was used because it contains the basic information needed to meet the minimum management requirements. Once the goals and objectives for a particular alternative were identified, the data set from Benchmark 7 was altered to reflect those goals and objectives. These alterations, depending on the objectives of a particular alternative, included: limiting the amount of land that FORPLAN could allocate to a given use, limiting the rate at which specific resource activities could occur, limiting the types of activities which could occur, setting minimum or maximum output levels for specific resources, and limiting the budget available to carry out Forest management activities (budget limits were applied only in Alternative A).

Given the goals, objectives, and limits for a specific alternative, the FORPLAN model selected the combination of management intensities and the activity schedule which maximized present net value.

FORPLAN

A computerized, mathematical optimization model of the Forest is used to help analyze many of these factors and their interactions. This model, called FORPLAN, assists in selecting that particular combination of lands, management prescriptions, and activity schedules that will best meet the objectives of each alternative. Virtually every National Forest uses FORPLAN in land management planning.

FORPLAN, which is a linear program model, also simulates the actions of the different resources, management, and environmental conditions on the Forest. The FORPLAN model is structured to seek the greatest economic efficiency (the most return for an investment). This is represented in its function of maximizing PNV. PNV or present net value is the value of the present and future monetary benefits after subtracting present and future monetary costs. FORPLAN also predicts monetary costs and benefits under the conditions specified to achieve the objectives of a particular alternative.

The interdisciplinary (ID) team is directly involved with the design, operation, and interpretation of the FORPLAN model. The land and resource base is stratified into land units or classes (analysis areas). Alternative management activities (management strategies) are developed for each of these units. The FORPLAN model examines these data and estimates the schedule of outputs and activities associated with the alternative. Since the FORPLAN model is not large enough to simultaneously analyze all of the quantifiable data associated with management of a Forest and is not capable of analyzing qualitative data, much additional analysis is completed using other analytical tools. The ID team must then assure that each alternative is correctly modeled and that the results are feasible and implementable.

Prior to the formulation of the FORPLAN model, other analytical techniques were used to specify the parameters and the constraints required to use or supplement the FORPLAN model. In some cases, the FORPLAN model will report that the Forest cannot be managed to meet some combination of objectives--the limitations of land and resources, an impact on an environmental quality, or the practical limits of budgets will result in an infeasibility. Then the interdisciplinary team must modify the objectives and make other computer runs to find the particular combination of lands, activities, and schedules which will best meet the goals of that alternative. Other analytic techniques are employed following a FORPLAN solution to validate that solution and to develop additional economic and other information about its implementation.

Role of Economics Within Alternative Formulations

Economic analysis played an important role in selecting the mix of timber management intensities available within each alternative. In advance of FORPLAN runs an exhaustive review was made of alternative silvicultural practices considering the many possible combinations of reforestation methods, precommercial thinning, commercial thinning and rotation length. In this review the number of silvicultural intensities was reduced from over 100 to 16 which were included in the FORPLAN model. These figures are exclusive of the great number of permutations which result from the various possible rotation lengths. Cost efficiency was considered including and excluding existing inventories; for both single rotations and perpetual rotations; with and without real price increases; with and without thinning slash treatment; and for a wide range of rotation lengths. Potential for producing timber volume was also considered. This process is more completely described in Appendix B.

All 16 management intensities were allowed in all benchmark and alternative runs. Issue-related constraints describing the desired Forest conditions were specified for each alternative. The possibility of a decision to not manage for timber production was also included. Therefore FORPLAN solutions provide the most cost-efficient means of achieving the desired future conditions within each alternative.

Translating these desired conditions into FORPLAN constraints allowed for the coordination of many Forest resources as an integrated mix (Appendix B). There are additional outputs and costs, however, which were not included in the FORPLAN model. They were included in a computer program, INTEGER. This program incorporated all benefits and costs into a single economic efficiency analysis, and provided the overall present net value for each alternative following FORPLAN analysis.

Description of the Analysis Process

Appendix B of this DEIS describes the entire analysis process in detail. Readers are encouraged to refer to that appendix for technical information not found in the more general description presented here.

The analysis used in formulating the alternatives is guided by the planning regulations (36 CFR 219.12(3) and (f)).

The first step in the analysis is to inventory the resources of the Forest. Areas with similar characteristics are combined into classes called analysis areas. These are the basic units used in modeling. They are subdivisions of the Forest based on similar characteristics of costs and natural responses to Forest management activities.

Analysis areas used in the analysis on the Wallowa-Whitman National Forest consisted of areas of similar characteristics which were not contiguous. When the analysis indicated a reasonable and implementable alternative had been formulated, the combination of analysis areas to be managed under a given management strategy formed the basis for management areas.

In conjunction with the creation of analysis areas and management areas, the interdisciplinary team generated management strategies which apply to specific management areas. They consist of direction for managing the resources of the management areas to which they apply. (Appendix D identifies the standards and guidelines, and where they can be found.) Mathematical estimates of their direct economic costs and resource yields were generated for use in the FORPLAN model. There are 18 management areas identified in the alternatives.

Management areas are identified on the map for each alternative which accompanies this DEIS. The management areas are described later in this chapter, and their acreages are shown in Table II-2.

Having identified areas for analysis and management, and having prescribed the appropriate management practices and their mathematical expressions for use in the FORPLAN model, the interdisciplinary team proceeded with the benchmark analysis in the formulation of alternatives.

Benchmark Analysis

The first step in the analysis following the building of the FORPLAN model involved the creation of benchmarks, and the inspection of their outputs, costs, and assumptions. Benchmarks are similar to alternatives in that they are a combination of land capability, management practices, and schedules to achieve certain objectives. But unlike alternatives, they are usually not capable of actually being implemented because they lack a consideration of likely budgets, specific geographic locations, environmental effects, compliance with management regulations, legal requirements, and other factors. They do provide significant information about the maximum biological and economic production opportunities. They assist in evaluating the compatibilities and conflicts among market and nonmarket objectives, and they define the range within which integrated alternatives will be developed.

Some benchmarks are economically based, while others indicate the maximum physical productivity of land for various resources. Benchmarks are described further in the section entitled "Alternatives Considered but Eliminated from Detailed Study" and in Appendix B. Their outputs are displayed in Table II-3a.

There are several benchmarks that are required by the regulations (36 CFR 219.12(e)) and National direction. They include:

- Minimum Level: This benchmark specifies the minimum level of management which would be needed to maintain the Wallowa-Whitman National Forest as part of the National Forest System.
- Maximum Present Net Value Based on Established Market Price: This benchmark specifies the management of the Forest which will maximize the present net value of those outputs that have an established market price.
- Maximum Present Net Value Including Assigned Values: This benchmark specifies the management which will maximize the present net value of those outputs that have either an established market price or assigned monetary value.
- Current Level: This benchmark specifies the management of the National Forest most likely to be implemented in the future if current direction is followed. This benchmark forms the basis for the "no action" alternative.

In these benchmark analyses, each option must include meeting the minimum management requirements (MMR's) of 36 CFR 219.27, such as protecting the productivity of the land and meeting minimum air and water quality standards and must reflect land allocation decisions already made, such as existing wilderness and the Hells Canyon National Recreation Area.

Other benchmark analysis is conducted to determine the effect of various minimum management requirements, discretionary constraints, the effect of restricting timber harvest rotations to the culmination of mean annual increment (CMAI), and of nondeclining evenflow (NDEF) of timber harvest. Benchmark analysis was also used to assess the effects of the Hells Canyon Comprehensive Management Plan.

Required Alternatives

The next task faced by the interdisciplinary team was the development of implementable alternatives. Among the alternatives formulated are several that are required by regulation and National and Regional direction. The required alternatives are listed and briefly described here.

- Current Direction (No Action): This is the alternative of "No Action" required by the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14) and by the NFMA planning regulations (36 CFR 219.12(f)). This alternative would continue the management of the Wallowa-Whitman National Forest as defined by existing direction in approved management plans; continuation of existing policies, standards, and guidelines; current budget updated for changing costs over time; and, to the extent possible, production of current levels and mixes of resource outputs. It does not meet all minimum management requirements. Alternative A is the Current Direction Alternative (the "No Action" Alternative) in this DEIS.

- Emphasis on Market Opportunities: Alternative B is the alternative in this DEIS which emphasizes market opportunities for the Wallowa-Whitman National Forest. This alternative has an emphasis on outputs that have an established market price (timber, livestock forage, commercial fish, and minerals). Management for other resources is at economically and environmentally feasible levels consistent with the emphasis on market-oriented outputs. It is also the RPA alternative. This alternative determines how the current (1980) RPA Program, distributed to the Forests through the Pacific Northwest Regional Guide, can best be implemented.

- Emphasis on Nonmarket Opportunities: Alternative F is the alternative in this DEIS which emphasizes nonmarket opportunities. This alternative puts an emphasis on water, fish and wildlife, recreation and other amenity values. Management for other resources is at economically and environmentally feasible levels consistent with the emphasis on amenity values.

- Emphasis on Nondevelopment and Intensified Management: Alternative E is the alternative which emphasizes wilderness, retention of roadless area, and intensified management in this DEIS. This alternative retains all of the roadless areas on the Forest as undeveloped while increasing commodity production on those areas already roaded. Its purpose is to balance the economic effects of not beginning commodity production in roadless areas.

"Departure" Alternatives

A departure alternative is one in which the rate of timber harvest is accelerated in one or more decades to achieve a specific purpose, and then reduced in later decades.

The rationale for formulating and considering the departure alternative is provided by National Forest Management Act regulations (36 CFR 219.16(g)(3)). Conditions, any of which may trigger a departure formulation, include:

- None of the other alternatives considered provides a timber sale schedule that achieves the assigned goals of the RPA Program as provided in Section 219.4 (b).
- High mortality losses from any cause can be significantly reduced or prevented or forest age class distribution can be improved, thereby facilitating future sustained yield management;
- Implementation of the corresponding base sale schedule would cause a substantial adverse impact upon a community in the economic area in which the Forest is located.

Two alternatives are departure alternatives in this DEIS. They have the same land allocations and resource management prescriptions as the alternatives which form their respective bases. However, in each case the timber harvest schedule has been modified from one which would result in a nondeclining flow of timber. Management under these alternatives would result in higher volumes of harvested timber in the near future, but have lower volumes of timber available in later decades.

Alternative B-departure was formulated to provide timber outputs in the first five decades as requested by the State of Oregon in the Forestry Program for Oregon. This requires an accelerated harvest in decades one through five and a reduced level of timber harvest in succeeding decades.

Alternative C-departure was developed to provide first decade sawtimber volume at recent historical levels while continuing a high level of harvest in lodgepole pine. The base sale schedules and departure schedules for these alternatives are shown in Figure II-1.

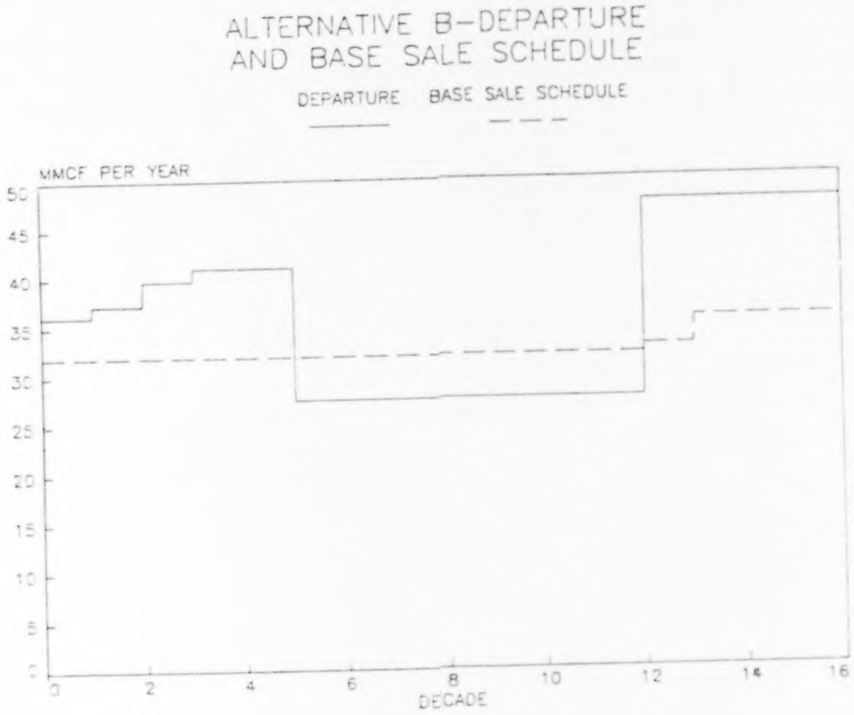
Other Alternatives

Additional alternatives, including those necessary to respond to the full range of public issues, management concerns, and resource use and development opportunities, were formulated to reflect a broad range of resource outputs and expenditure levels. Additional alternatives respond to 36 CFR 219.12(f)(1) which requires alternatives to be distributed between the minimum resource potential and the maximum resource potential to display the full range that a Forest could produce.

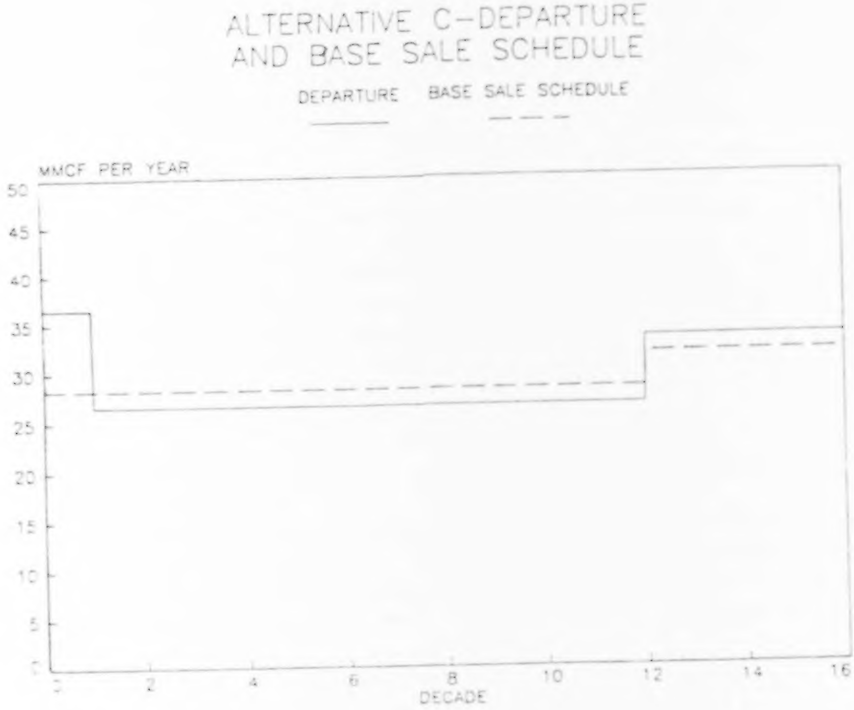
The Preferred Alternative (Alternative C)

The selection of the Preferred Alternative was made only after careful comparison of all the alternatives on the basis of resource outputs, environmental effects, implementation costs, and the "trade-offs" among them. The Preferred Alternative is that alternative which was selected from all those

Figure II-1



ALTERNATIVE B-DEPARTURE AND BASE SALE SCHEDULE



ALTERNATIVE C-DEPARTURE AND BASE SALE SCHEDULE formulated as the one which best maximized the net public benefits in an environmentally sound manner. After the Forest Supervisor reviewed the interdisciplinary team's evaluation, and after the Regional Forester and his staff had reviewed the alternatives, this alternative was selected as the Preferred Alternative in this Draft EIS.

Alternative C is the Preferred Alternative in this Draft Environmental Impact Statement. Following public review and comment on this DEIS it may become apparent that a different alternative better maximizes net public benefits or that Alternative C could be improved through modification. If so, these changes will be reflected in the Final Environmental Impact Statement.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Several additional alternatives were considered but eliminated from detailed study. These are alternatives which were considered for full development but which were not developed in detail, either because they closely resembled other alternatives which were developed in detail or because they were determined not to be implementable.

Benchmarks

Benchmarks were developed to estimate resource and economic potentials (see discussion in Appendix B) with little or no consideration given to multiple-use objectives or resolution of Forest management issues. While the benchmarks provided much useful information for the development of detailed alternatives, the formulation of the benchmarks themselves often precluded their consideration as alternatives. The outputs and activities associated with the benchmarks are portrayed in Table II-3a.

The Minimum Level of Management benchmark was constructed only as a reference point. Its purpose was to identify the minimum cost associated with keeping the Wallowa-Whitman National Forest in Federal ownership. Activities such as timber harvest, livestock grazing, recreation at developed sites, and most road maintenance would cease. It would turn the Forest into an area of general nonuse. Because its implementation is inconsistent with NFMA requirements that the Forest be managed for multiple-use, it was not developed into a complete alternative.

The Maximize PNV benchmark, valuing market benefits only, is designated in the Pacific Northwest Region as Run 11. It was constructed as a basis for comparison to Run 7 (described below) and thus was not itself developed into an alternative. Its purpose is served in providing information to technical reviewers. Because it fails to quantify many Forest benefits (big-game hunting, for instance) it does not portray the Forest situation accurately.

Run 7 is the Maximize PNV benchmark, the benchmark which most closely approximates an alternative. It was not studied in detail as an alternative because it ignores the needs of big game; it gives no consideration to landscape appearance; and because its forcing of all noneconomic considerations to their respective minima is inconsistent with 36 CFR 219.27(b)(3) which states that management prescriptions shall, "(3) Not be chosen primarily because they will give the greatest dollar return...." This benchmark provided the basis for Alternative G.

Run 4 shows what happens when Run 7 is formulated without a requirement to harvest timber on a nondeclining evenflow basis and without complying with NFMA's stipulation that stands shall generally have achieved culmination of mean annual increment (CMAI) prior to harvesting. These shortcomings are in addition to those noted for Run 7 above; therefore it was not developed into an alternative.

Run 8, like Run 11, values market benefits only and was constructed to provide a basis for comparison to Run 4. Its purpose is served in providing information for technical reviewers--not in providing an accurate description of the situation (e.g. it does not recognize the economic value of some major Forest uses such as recreation). Therefore, it was not developed into an alternative.

The Maximize Timber benchmark was constructed in two formulations, one with minimum management requirements and one without. Neither exhibited any potential for development into alternatives. With their lack of multiple-use considerations, they are at variance with 36 CFR 219.27(b)(3) which states that management prescriptions shall, "(3) Not be chosen primarily because they will give...the greatest output of timber...." Also, they are not consistent with the stricture of 36 CFR 219.27(b)(1) that management prescriptions shall, "(1) be best suited to the multiple-use goals established for the area...." As formulated, they regard timber as being homogeneous (a cubic foot of lodgepole being the equivalent of a cubic foot of Douglas-fir; a cubic foot of 50-year old ponderosa pine being the equivalent of 100-year old ponderosa pine) and costs as being irrelevant. Developed with and without minimum management requirements, these benchmarks provide some indication of the amount of timber volume lost as a result of applying minimum management requirements. They do not give an accurate portrayal of that loss because economic criteria are ignored in both instances. Whereas benchmarks run with "maximize present net value" objective functions are designed to maximize efficiency over 150 years, "Maximize Timber" objective function benchmarks were run to maximize timber production over ten years. There is little comparability between Maximize Timber objective function benchmarks and other benchmarks. Economic data from Maximize Timber benchmarks are irrelevant.

The Maximize Livestock benchmark was used in the development of Alternative B-departure. Its high levels of livestock grazing, while less economically efficient than other levels, were felt to be appropriate to the maximum commodity emphasis of Alternative B-departure. The benchmark itself is not portrayed as an alternative because of the problems cited for Run 7, whose FORPLAN run it shares.

The Maximize Elk benchmark imposed restrictions on road construction and roads open to vehicular traffic which were believed to be too extreme for implementation. From this benchmark Alternative F was developed which emphasizes elk production.

For purposes of clarity it is important to note that the Current Direction benchmark is presented as an alternative. It cannot be implemented without change to existing Federal legislation because it does not meet minimum management requirements for wildlife.

Other Alternatives Eliminated From Detailed Study

In order to determine the costs of several constraints, an alternative was formulated without constraints for timber harvest dispersion, old-growth distribution or visual requirements. It also did not retain any nonwilderness lands in a roadless condition. This alternative was not considered further because harvest dispersion and old-growth distribution constraints are necessary to allow for recognizable maximum regeneration harvest units (less than 40 acres, shaped and blended to the extent practicable), and to maintain viable populations of native vertebrate wildlife. Also, it is felt that some minimum acknowledgement of visual resources is necessary to provide a viable alternative. As formulated, this alternative would have provided approximately 7 percent more cubic volume of timber in the first decade than Alternative B.

An alternative similar to Alternative B was formulated which ignored the land allocation of the recently completed Hells Canyon NRA Comprehensive Management Plan, but maintained the assumption of selection harvest only (including shelterwood harvest). This alternative would have provided an approximate 5.7 percent increase in cubic volume of timber in the first decade as compared to Alternative B (about 9 MMBF annually). This would have required a reanalysis of all major resources of the area pursuant to guidelines found in Public Law 94-199, the act which created the NRA.

Public Law 94-199 required that a separate plan be developed for the Hells Canyon National Recreation Area. Such a plan was developed and was approved on April 30, 1982. The regulations guiding the development of Forest Plans (36 CFR 219.2(b)) state that, "(if), in a particular case, special area authorities require the preparation of a separate special area plan, the direction of any such plan may be incorporated without modification in plans prepared under (these regulations)." For the following reasons the Hells Canyon Comprehensive Management Plan is being incorporated into all the alternatives for the Forest Plan: (1) the analysis completed during development of the Hells Canyon Comprehensive Management Plan is still valid; i.e., the issues and concerns identified as being important in management of the area along with the preferred alternative for resolving those issues are unchanged, (2) the process for amending or revising the Hells Canyon Comprehensive Management Plan was established by the Assistant Agriculture Secretary's appeal decision of April 27, 1984 (see further discussion below), and (3) the National Forest Management Act implementing regulations require that, "a Forest Plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It may also be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the plan have changed significantly or when changes in RPA policies, goals, or objectives would have a significant effect on Forest level programs." Revision of the Forest Plan will include new planning for the Hells Canyon NRA. If the Forest Plan is amended this may include replanning for the NRA.

In his decision of April 27, 1984 the Assistant Secretary of Agriculture for Natural Resources directed that:

> "The plan shall be revised or amended whenever (1) the Forest Supervisor determines that conditions or demands of the public in the area covered by the plan have changed significantly or (2) when any Forest Plan or Forest Plans adopted for the Wallowa-Whitman, Nezperce or Payette National Forests sets a timber harvest level or any other output level which alone or in combination with the Forest Plan for one or more of those Forests might have a significantly adverse effect on the economy of Wallowa County or Baker County in Oregon or Adams County, Idaho County, or Nez Perce County in Idaho. If revision or amendment occurs because of the second of the above-described conditions, every reasonable effort will be made to eliminate or mitigate the significantly adverse effect on the economy of the affected county or counties by revising or amending the Comprehensive Management Plan."

There is no indication that the first condition has occurred. Following implementation of Forest Plans for the Nezperce, Payette, and Wallowa-Whitman National Forests an analysis of the combined economic effects of these Forests on Baker, Wallowa, Adams, Idaho, and Nez Perce Counties will be made. If it is determined that a significantly adverse effect will result, the Hells Canyon Comprehensive Management Plan will be revised or amended.

Alternatives Proposed by Other Groups

During development of the Forest Plan alternatives much input was received from interested groups and individuals. Two groups, the Powder River Sportsmen's Club and the Oregon Natural Resources Council (ONRC), working with the interdisciplinary team, submitted their own Forest Plan alternatives and suggested numerous improvements for the Forest-wide standards and guidelines and the management strategies. After in-depth consideration by the interdisciplinary team and the Forest Supervisor, and comparison with the other Forest Plan alternatives, neither was developed into an alternative considered in detail. This does not mean that the information wasn't used or that the substantial effort made by the groups in developing the alternatives was wasted. Many of the facets of the submitted alternatives had been considered in the benchmarks or other alternatives and some were integrated with other Forest Plan alternatives considered in detail. Following is a summary of the major facets of the alternatives submitted by the Powder River Sportsmen's Club and the ONRC and their disposition.

Powder River Sportsmen's Club Alternative

(The starting point for this alternative was Alternative C and many of its features were retained.)

Major Facet	Disposition
Retain 5 percent of nonwilderness forest lands in an old-growth condition.	Alternatives C, C-departure, D, F, and H provide this level of old-growth, or more.
Limit open road density (on a Forest-wide basis) to 2.5 miles per square mile.	All alternatives include a maximum open road density of 2.5 miles per square mile or less.
Manage big-game winter ranges and selected summer ranges at the highest possible habitat effectiveness for elk (80-100 percent of potential).	The maximum elk benchmark provides elk habitat effectiveness at more than 80 percent of potential across the Forest.
Limit open road density to 0.75 miles per square mile and total road density to 3.0 miles per square mile on big-game winter ranges and on selected summer ranges.	A 0.75 mile per square mile open road density was considered in the maximum elk benchmark. Total road density is normally dictated by the specific characteristics of the area being roaded. A 3.0 mile per square mile total road density would require longer log skidding distances and increased fording of streams with logging equipment producing increased soil and water damage. These were considered unacceptable and are not considered in any alternative.
Preclude timber harvest in a 100-foot wide strip around wetlands and meadows and along each side of nonfish-producing streams and in a 200-foot wide strip along each side of fish-producing streams.	While this may provide the maximum streamcourse protection it would severely complicate transportation and logging system design considering the thousands of miles of streamcourses on the Forest. Timber harvest along many streamcourses is restricted to

Powder River Sportsmen's Club Alternative (Continued)

	maintain or enhance water quality in all alternatives. This reduction amounts to approximately 40 percent within the riparian zones. These zones vary from 60 to 120 feet in width de- pending on the importance of the stream.
- Assume constant real stumpage prices on summer ranges, winter ranges, and areas where anadromous fish habitat is emphasized.	- Although no benchmark or alternative is displayed with a constant real stumpage price (a 1 percent annual real price increase is assumed in all FORPLAN runs) the sensitivity of the FORPLAN model to real price increases was tested during benchmark analysis. No change in acreage managed for timber production occurred when varying the projected annual real stumpage price increase from 0 to 2 percent.
- Exclude the Baker and La Grande domestic supply watersheds from commercial timber harvest.	- The Baker watershed is left undeveloped in Alternative E. Much of the La Grande watershed is currently under contract for road development and harvest activities and is not considered for nondevelopment in any alternative.
- Lake Fork, Joseph Canyon, Catherine Creek, Monument Rock, and Twin Mountain Roadless Areas and a portion of Squaw Roadless Area would be retained in a roadless condition.	- These roadless areas remain undeveloped in their entirety in Alternative E and are developed to varying degrees in the other alternatives (see Appendix C).
- Portions of Bear Creek, North Fork John Day, Catherine Creek and Grande Ronde drainages would be managed emphasizing anadromous fish habitat.	- These drainages, and others, are managed emphasizing fish habitat in Alternative F. The North Fork John Day Drainage is also managed

Powder River Sportsman's Club Alternative (Continued)

Major Facet	Disposition
	emphasizing anadromous fish in Alternatives C, C-departure and H.
- In big-game winter ranges, selected summer ranges, and in areas where anadromous fish habitat is emphasized, timber harvest would be limited to stands having a positive present net value.	- No alternative or benchmark was developed which limited harvest to stands with a positive PNV in only these specific areas. However, Alternative C limits harvest to stands with a positive PNV across the entire Forest.

Oregon Natural Resource Council Alternative

Major Facet	Disposition
- Recommend for addition to the National Wilderness Preservation System the Grande Ronde, Lake Fork, Huckleberry, Catherine Creek, Reservoir, and Joseph Canyon Roadless Areas.	- These areas were considered for wilderness designation during the Roadless Area Review and Evaluation Process (RARE, RARE II) and again by Congress prior to the Oregon Wilderness Act of 1984 (P. L. 98-328). Under P. L. 98-328 a review of roadless areas for wilderness consideration is required when the Forest Plans being developed now are revised (within 15 years) but such a review is not required for this plan. Under Alternative E, all roadless areas would be kept undeveloped, thus retaining the option for future designation as wilderness. In other alternatives some or parts of these areas are left undeveloped (see Appendix C).
- Manage to retain an undeveloped condition (nonwilderness) in the Twin Mountain, Marble Point, Upper Grande Ronde, and Greenhorn roadless areas and portions of the North Mount Emily Roadless Area.	- With the exception of the Upper Grande Ronde, all of these areas are retained in an undeveloped condition in Alternative E and to varying degrees in several other alternatives (see Appendix C).

Oregon Natural Resource Council Alternative (Continued)

Major Facet	Disposition
	The Upper Grande Ronde area is currently under contract for road development and timber harvest and is not available for nondevelopment in any alternative.
- Recommend for addition to the National Rivers System portions of the North Fork John Day, North Powder, North Fork Burnt, South Fork Burnt, Imnaha, and Grande Ronde Rivers, and Lake Fork, Eagle, Elk, and Joseph Creeks.	- With the exceptions of the North and South Forks of Burnt River, Imnaha River, Lake Fork, and Elk Creeks, all the proposed rivers are considered in one or more Forest Plan alternatives developed in detail (Eagle Creek and the North Powder River were added as a result of the ONRC proposal). The North and South Forks of Burnt River and Lake Fork and Elk Creeks, while being scenic and important for dispersed recreation, were determined to lack any specific "outstandingly remarkable" features as required for eligibility and were not considered in any alternative. The Imnaha River is not considered because adding it to the National Rivers System would require changing land allocations within the Hells Canyon National Recreation Area.
- Manage old-growth timber at the MMR level plus 60,000 evenly distributed acres outside wilderness.	- Alternative F includes some 43,000 acres of old-growth above the MMR level outside wilderness and the HCNRA. This represents the highest possible level of old-growth retention, given the amount of old-growth existing and the amount currently under timber sale contracts.

Oregon Natural Resource Council Alternative (Continued)

Major Facet	Disposition
- Preclude new power transmission corridors.	- All alternatives identify areas on the Forest where additional utility corridors are to be avoided or excluded. New utility corridor construction is excluded from wilderness areas while areas to be managed in an undeveloped condition are identified for avoidance. In no alternative is the entire Forest excluded from new development.
- No timber harvest would be permitted around seeps, bogs, meadows, within 200 feet of fish-producing streams or within 100 feet of other streams (a separate management strategy would be developed).	- See discussion on the same subject under the Powder River Sportsmen's Club alternative.
- All potential research natural areas would be recommended.	- This occurs in Alternatives C, C-departure, D, E, F, and H.
- All existing administrative and recreational sites would be retained as would the Starkey Experimental Forest and Range.	- This is true of all Forest Plan alternatives developed in detail.

All information provided by the Powder River Sportsmen's Club and ONRC is available for review at the National Forest Headquarters in Baker, Oregon. This includes the details of each proposal and the accompanying maps.

ALTERNATIVES CONSIDERED IN DETAIL

The alternatives considered in detail demonstrate different ways of managing the land and resources of the Wallowa-Whitman National Forest. Each is an implementable combination of land uses, management practices, and activity schedules which results in a unique combination of resource outputs, land uses, and environmental conditions. Alternative A cannot be imlemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife. Alternative B-departure also cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

Many considerations went into the development and formulation of alternatives considered in detail. The issues and concerns (described in Chapter I and Appendix A) were the major factors driving the alternative formulation process but the interrelationships among resources (Chapter III) and the information gained during benchmark analysis also played important roles.

A detailed description of how FORPLAN computer runs were formulated and their constraints is found in Appendix B. All alternatives considered in detail were modeled in FORPLAN.

Each alternative was then reviewed by the interdisciplinary team and the Forest management team to assure that it was a reasonable and implementable alternative. Maps of the alternatives accompany this DEIS.

Range of Alternatives

The alternatives together represent a broad range of reasonable management alternatives. This is displayed in Figure II-2 which compares, by several major resources, the range of alternatives with the potential range determined during benchmark analysis.

Mitigation Measures

An important part of each alternative is its associated mitigation measures. Mitigation measures serve to reduce the potentially adverse effects of the alternatives by avoiding, minimizing, rectifying, or reducing them (or in some cases compensating for them). Most of the mitigation measures for any alternative can be found in the form of management standards and guidelines. Standards and guidelines for the preferred alternative are found in Chapter 4 of the Proposed Forest Plan accompanying this DEIS. In some instances, standards and guidelines for other alternatives differ from those for the preferred alternative. These differences are described in Appendix D to this DEIS. Mitigation measures are an integral part of each alternative and may be included in the alternative descriptions found elsewhere in Chapter II. Some mitigation measures are also described in Chapter IV of this DEIS to give the reader a better understanding of the environmental consequences of the alternatives.

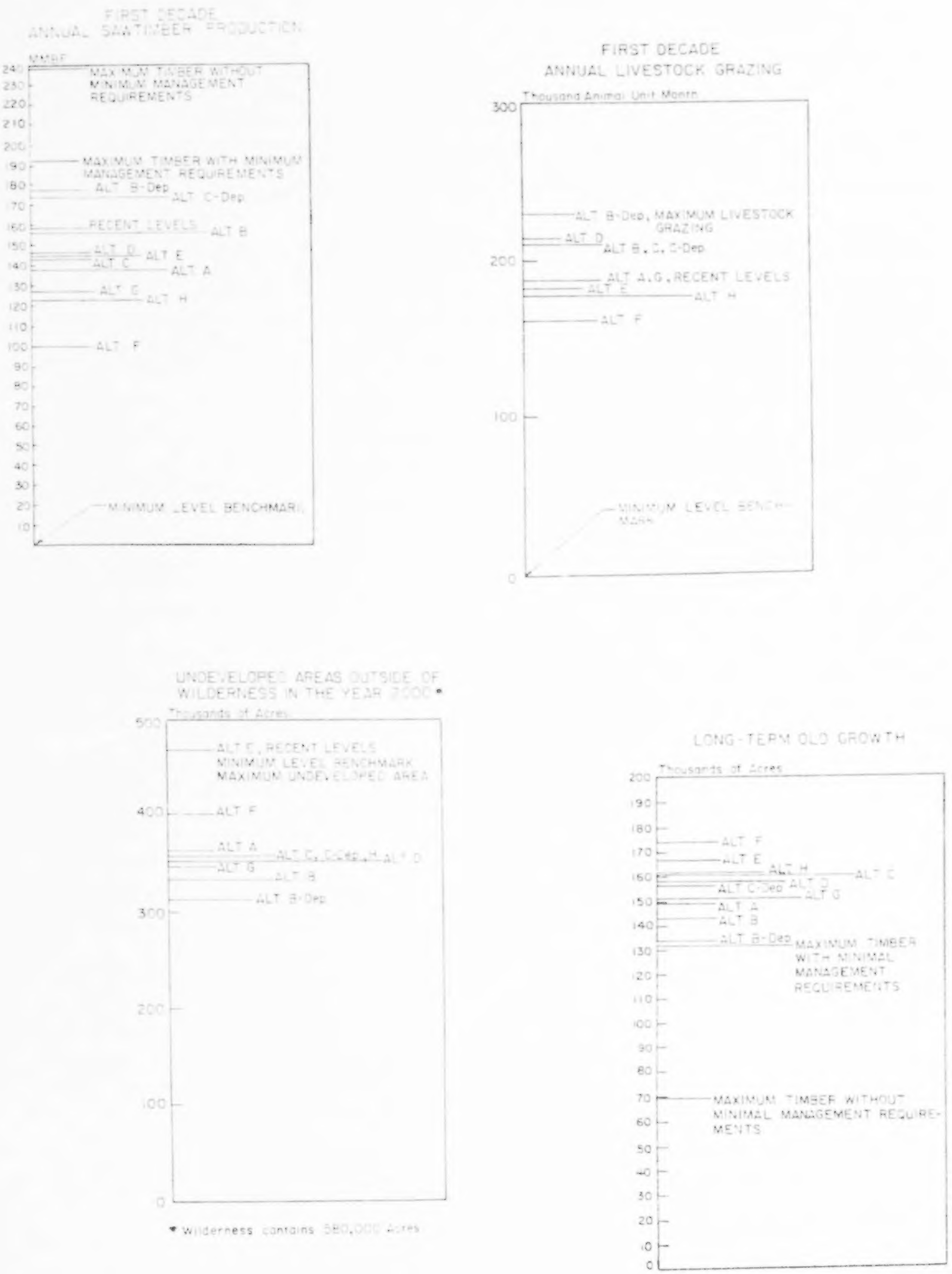
Elements Common to All Alternatives

A number of factors are common to all alternatives considered in detail. They are described below:

The livestock grazing levels shown for each alternative are estimates for the Forest as a whole, based on available forage and reasonable investments by livestock permittees and the Forest Service. The levels for individual allotments will depend on allotment-specific analysis.

The land allocations and direction for the Hells Canyon National Recreation Area, including the Hells Canyon Wilderness, are as identified in the HCNRA Final Environmental Impact Statement, Comprehensive Management Plan, the Record of Decision of April 30, 1982, and the Agriculture Secretary's decisions of April 21 and June 27, 1983 and April 27, 1984.

Figure II-2



* Wilderness contains 580,000 Acres

All existing wilderness is retained and managed within the framework of the Wilderness Act of 1964.

Alternatives for management of the North Fork John Day and Monument Rock Wildernesses will be described in the Draft Environmental Impact Statements for the Umatilla and the Malheur National Forest Land and Resource Management Plans, respectively. In each instance the Wallowa-Whitman portion of the wilderness is small and the primary responsibility for the analysis rests with the Forest having the larger portion.

The Eagle Cap Wilderness is retained. The environmental analysis described in "An Environmental Assessment for Interim Management of the Eagle Cap Wilderness" (approved March 31, 1982) is incorporated, by reference, into this analysis. Each Forest Plan alternative incorporates one alternative discussed in the 1982 assessment. (Copies of this environmental assessment are available from the Wallowa-Whitman National Forest Headquarters in Baker, Oregon.)

The Homestead Further Planning Area is retained in an undeveloped condition in all alternatives, pending completion of a study by the USDI Bureau of Land Management (BLM). The BLM, which manages the bulk of the further planning area, is studying its wilderness potential and will make a recommendation either for or against wilderness designation. The BLM recommendation will become a part of any Forest Plan alternative selected. In the event that wilderness designation is not recommended, land use will be as shown on the map for the preferred Forest Plan alternative accompanying this DEIS.

In June 1981, the Pacific Northwest Region of the USDA Forest Service issued a Programmatic Final Environmental Impact Statement (FEIS) for Methods of Managing Competing Vegetation. It included detailed discussions and analyses of a preferred alternative (full use of all methods, chemical use critically examined); alternatives to the preferred (including no vegetation management, and no application of herbicides); and the consequences of these alternatives on the environment. Based on the preferred alternative in the Methods of Managing Competing Vegetation Environmental Impact Statement (EIS), all alternatives in this Forest Plan EIS are predicated on the continued use of the full range of alternative treatment methods including manual, mechanical, prescribed fire, biological, and chemical methods. The Proposed Forest Plan (Chapter 4) directs that: (1) the selection of any particular treatment method will be made at the project level based on a site-specific analysis of the relative effectiveness, environmental effects (including human health), and costs of the feasible alternatives, and that herbicides will be selected only if their use is essential to meet management objectives; and that (2) monitoring and enforcement plans to implement specific measures will be developed for site-specific projects and described in the environmental analyses for these projects. If these chemical tools are not available it may be necessary, regardless of alternative, to adjust projected costs and/or to reduce the proposed levels of timber outputs.

The Indian Creek Research Natural Area is retained.

All existing developed recreation sites are retained. This includes existing developments at Anthony Lakes, Phillips Lake, Mt. Howard, and numerous other sites across the Forest. The Reservoir Area Management Plan of March 1971 (the plan for managing the Phillips Lake area) is incorporated, by reference, into all alternatives.

The Baker and La Grande domestic supply watersheds are managed in accord with existing Secretary of Agriculture agreements.

Items specific to the La Grande domestic supply watershed which are the same in all alternatives include:

- Grazing of domestic livestock is limited to pack stock associated with recreation.
- The watershed is closed to off-road vehicle use except for over-snow vehicles operating on four or more inches of snow.
- An area adjacent to the Beaver Creek Reservoir and the domestic supply intakes, sufficient in size to protect water quality, is closed to camping.
- The entire watershed is open to nonmotorized types of dispersed recreation including hunting, hiking and backpacking.
- The Beaver Creek Reservoir is closed to fishing, swimming, wading, or other activities which require substantial contact with the water.
- A trail system permitting access to the watershed is provided.
- Roads constructed within the watershed will normally remain closed although some may be left open for fuelwood cutters or other purposes if their use would not create soil or water damage.

Items specific to the Baker domestic supply watershed which are the same in all alternatives include:

- Grazing of domestic livestock is limited to pack stock associated with recreation. Use of recreational livestock will be limited to National Forest System Trails.
- Marble Creek Road (Road 6510) will normally remain open to public use. Signs may be installed by the city instructing users that they are on a domestic supply watershed and specifying any special restrictions.
- Public hunting and fishing within the watershed and use of the pipeline road are permitted without approval from the City of Baker.
- All roads constructed for timber harvest will be stabilized at completion of timber sale contracts, unless otherwise agreed to with the City of Baker. Selected roads may be gated to provide access for wildfire control and other administrative purposes.

Within the Sumpter domestic supply watershed, Road 7300900 (McCully Fork Road) will be closed to public motorized vehicle use within the watershed but will remain open to administrative use by the Forest Service and the city officials.

Within the Wallowa domestic supply watershed, increased grazing of domestic livestock will occur only if a site-specific environmental analysis demonstrates that adverse impacts on the domestic water supply will not result.

The rights retained on ceded lands by the Walla Walla, Cayuse, Umatilla and Nez Perce Indians, as specified in existing treaties, will be recognized and provided for in Forest activities.

A consequence of some of these common elements is that 42 percent of the Forest is currently allocated to some use or uses and the opportunity for analyzing alternate uses within this DEIS is foregone. The range of all outputs and effects, summarized on a Forest-wide basis, is also narrowed. This is particularly true of roadless areas. Although the Forest includes some 464,728 acres of roadless area in total, 232,570 of these (50 percent) are previously allocated within the Hells Canyon Comprehensive Management Plan, leaving 232,158 acres available to consider in the analysis of Forest Plan alternatives.

Following is a summary of these allocations, totalling 1,011,597 acres or 42 percent of the Forest. This is further displayed in Figure II-3.

Descriptor	Acres
Wilderness	582,700
Phillips Lake Area	4,967
Snake River Corridor (HCNRA)	14,355
Disp. Recreation/Native Vegetation (HCNRA)	161,078
Forage (HCNRA)	128,009
Disp. Recreation/Timber Management (HCNRA)	75,366
Homestead Further Planning Area	5,733*
Starkey Experimental Forest and Range	27,051
Administrative and Recreation Sites	5,744
Utility Corridors	6,594

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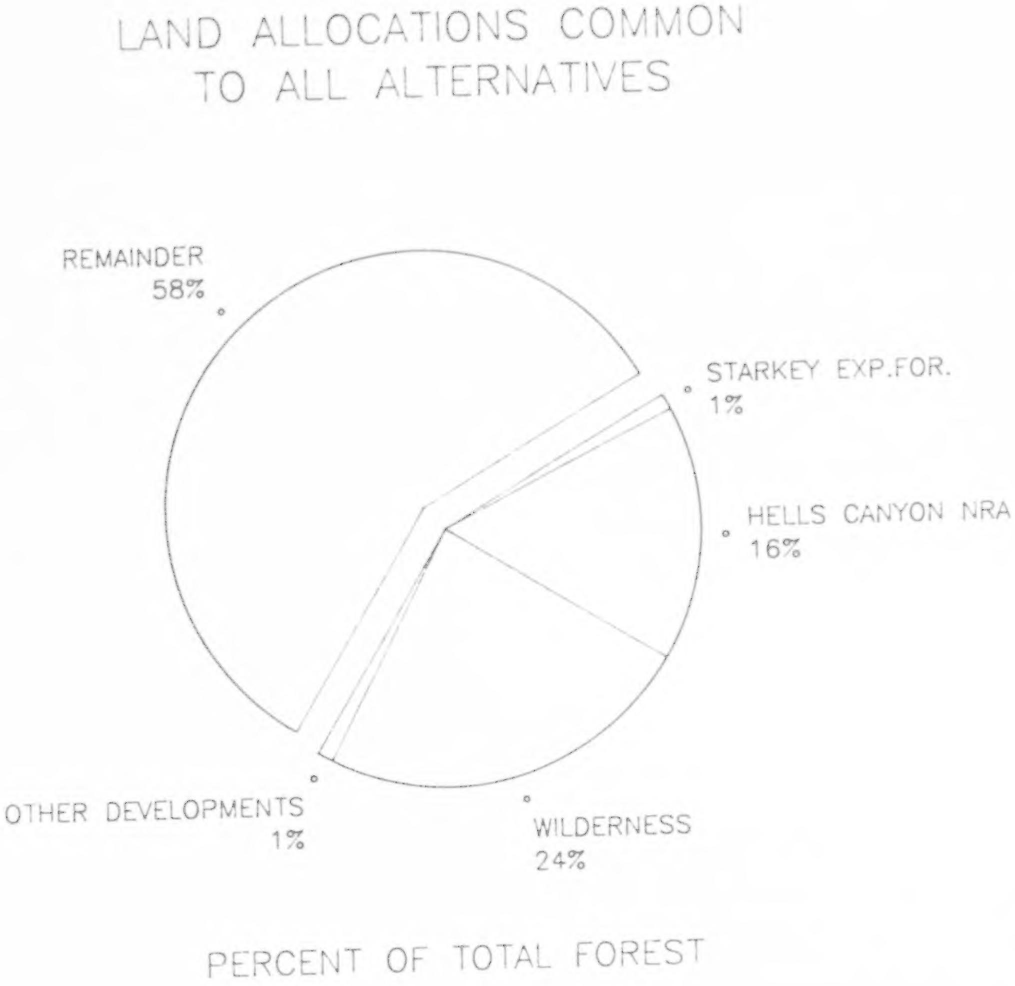
*This area is currently being analyzed for wilderness potential by the USDI Bureau of Land Management. If the Homestead Further Planning Area does not become wilderness 3,708 acres would become part of Management Area 10 with the remaining acres being within Management Areas 1, 2, or 3, depending on the alternative selected through this Forest planning effort.

Figure II-3


LAND ALLOCATIONS COMMON TO ALL ALTERNATIVES
REMAINDER 58%
STARKEY EXP.FOR. 1%
HELLS CANYON NRA 16%
WILDERNESS 24%
OTHER DEVELOPMENTS 1%
PERCENT OF TOTAL FOREST

Alternative A
(Current Direction — No Action)

Description

This alternative represents continued implementation of the management direction provided by the six existing land management (unit) plans including the management plan for the Hells Canyon NRA. The intent of this alternative is to provide an estimate of the activities and outputs likely to occur if management were to continue under the direction found in these plans. It also serves as a standard of comparison for evaluating the other alternatives. To make this alternative consistent and comparable with the other alternatives, resource yield tables are based on the most recent inventory information. This includes current timber inventory information and improved data on the suitability of land for timber production. Only National Forest Management Act requirements that are a part of the current direction, as established in the unit plans, are incorporated into this alternative. Since this alternatives does not fully meet the requirements of the National Forest Management Act, it cannot be implemented without a change in law.

The total Forest budget is constrained to the average budget during the period 1980-1983, expressed in 1982 dollars. The proportion of the Forest budget expended for various purposes (such as timber, range, or recreation) varies depending upon the level of outputs being provided. Within this budget, output and activity levels projected by the unit plans and resource management plans are met as closely as possible. A description of this alternative by resource follows.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area, none are recommended for wilderness, 110,016 acres are retained in a roadless condition (dispersed recreation emphasis) and 125,185 acres are available for development.

Soil and Water. Soil and watershed restoration occur at historical levels.

Timber. Timber harvest is scheduled from 862,000 acres. Available timberlands not scheduled for timber harvest include alpine and subalpine areas around the perimeter of the Eagle Cap Wilderness and in the Elkhorn Mountains. Timber management emphasizes big-game habitat on winter ranges and on many summer ranges. Some less productive forest areas are managed under a low investment timber management strategy. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 28.2 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 186,000 animal unit months, the recent historical level. This alternative includes an increased level of range management investment to correct existing range problems and to maintain current livestock numbers.

Recreation. Primitive and semiprimitive recreation opportunities are provided within wilderness, portions of the Hells Canyon National Recreation Area, and within alpine and subalpine areas in the Elkhorn and Wallowa Mountains. Dispersed recreation in a managed setting is provided on the remainder of the Forest. Recreation site construction and reconstruction are at the rate of 100 PAOT* capacity per year throughout the planning period. The recreation site development directed in the Hells Canyon Comprehensive Management Plan will not be completed during the life of the Forest Plan.

Wilderness. The Eagle Cap Wilderness continues to be managed under the current interim direction (Alternative C of the Eagle Cap Environmental Assessment).

Wild and Scenic Rivers. No additional wild, scenic, or recreational rivers are recommended.

Landscapes. This alternative retains a high level of visual quality within visually sensitive travel routes.

Transportation. Thirty-seven percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. Other portions of the Forest are currently roaded but do not provide access to some areas. Entering these areas will require 1,792 miles of new road to complete the Forest road system. Under current management direction the objective for road management is to limit miles of open road (open on a year-round basis) to 2.5 miles per square mile. To achieve these open road densities, approximately 1,730 miles of existing roads need to be closed.

It is estimated that road construction in areas which are currently roadless will total 276 miles in the first decade, 163 miles in the second decade, and 28 miles in the third decade. An additional 430 miles of temporary road will be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. The Indian Creek Research Natural Area is retained. No additional Research Natural Areas are recommended although areas could be added following separate environmental analyses.

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Current old-growth allocations total 76,919 acres. This allocation is a managed old-growth allocation of which only 27,260 acres are currently in an old-growth condition. The remaining acres are in earlier successional stages being managed with the objective of attaining old-growth sometime in the future (with existing stands to be cut as replacement stands achieve old-growth characteristics). The total acreage of old-growth forest provided by this alternative is similar to other alternatives, but its distribution does not satisfy minimum management requirements for the pileated woodpecker, pine marten, and three-toed woodpecker (see Appendix G). This distribution of old-growth is expected to marginally satisfy needs of the goshawk and Townsend's warbler. Fourteen thousand acres of unsuited subalpine forest and 41,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide over the long term approximately 149,000 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

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*Persons at one time

Timber managed without thinnings (363,000 acres) ensures the future development of pole thickets, and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 537,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Elk (big-game) winter ranges were mapped differently during development of the unit plans than during the most recent inventory. As a consequence, some boundary differences are found. The unit plans, in general, provide a high level of habitat protection on elk (big-game) winter ranges. Unit plan direction provides for a variety of management intensities on summer ranges, from a high level of habitat protection to a minimum level.

Management of fish habitat continues under current direction which calls for meeting State water quality standards and improving deteriorated riparian conditions. Riparian habitat will be maintained or enhanced through improved range management techniques to the benefit of the yellow warbler and salmonid fishes. This alternative provides approximately 42 acres per year in anadromous fish habitat improvement.

Municipal Watersheds. The La Grande domestic supply watershed is managed under the low investment timber management strategy (14,045 acres) and old-growth management (1,586 acres) as described in the Grande Ronde Unit Plan. The low investment timber management strategy permits scheduled timber harvest, with timber management at a low intensity level. Harvest is infrequent and intensive timber management practices such as precommercial thinning do not occur.

The Baker domestic supply watershed (8,740 acres) is managed under the Baker Watershed Management Strategy from the Burnt Powder Land Management Plan. This strategy emphasizes maintenance and improvement of water quality and streamflow timing.

The Sumpter domestic supply watershed (6,687 acres) is managed under the following management strategies from the Burnt Powder Land Management Plan:

Management Strategy	Acres
Dispersed recreation emphasis	975
Intensive wood forage management	3,056
Low investment timber management	2,388
Old-growth	32
Optimum wood/big-game	236
Total acres	6,687

Minerals. Of the areas of known mineral potential, 189,400 acres are open to mineral entry with normal coordination requirements, 40,000 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Following are the land allocations summarized from the unit plans.

Management Strategy	Acres	Percent
Intensive Wood/Forage	426,130	18.1
Optimum Wood/Big-game	423,232	18.0
Low Investment Timber Management	289,156	12.4
Dispersed Recreation Emphasis	124,805	5.3
Old-growth	76,919	3.3
Baker Watershed	8,740	0.4
Starkey Experimental Forest and Range	27,051	1.2
Research Natural Area	974	0
NRA Dispersed Recreation/Timber Management	75,366	3.2
NRA Forage Production	128,009	5.4
NRA Dispersed Recreation/Native Vegetation	161,078	6.9
NRA Snake River Corridor	14,355	0.6
Further Planning	5,733	0.2
Wilderness	582,700	24.8
Phillips Lake Area	4,967	0.2
	2,349,215	100%

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Alternative B
(RPA)

Description

This alternative was formulated with primary emphasis on the timber, livestock forage, and local economy issues. This alternative is the RPA alternative and attempts to provide outputs and activities as assigned to the Forest through National and Regional planning. RPA targets for recreation, timber, livestock, anadromous fisheries, and watershed improvements are met. This is also the alternative which emphasizes market opportunities.

Roadless Areas. Of the 235,201 acres of inventoried roadless areas outside the Hells Canyon National Recreation Area, none are recommended for wilderness, 60,108 acres are retained in a roadless condition and 174,498 acres are available for development.

Soil and Water. Soil and water improvement is at a level substantially higher (1,000 acres/year) than recent historical levels.

Timber. Timber harvest is scheduled from 875,000 acres. All available, capable and tentatively suitable forest lands are available for timber harvest except for those lands needed to meet the old-growth objectives of this alternative and lands allocated to other uses in the Hells Canyon Comprehensive Management Plan. Areas not scheduled for timber harvest include alpine areas near the Eagle Cap Wilderness and in the Elkhorn Mountains. These are limited to nonforest lands or lands which are otherwise unsuited for timber management. An additional 62,000 acres are not scheduled for harvest by the FORPLAN model because they are economically inefficient for harvest under this alternative. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 31.9 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 207,000 animal unit months (AUM's) in the first decade increasing to 227,000 AUM's by the fifth decade. This approximates the RPA target level and represents a first-decade increase of 11 percent over recent historical levels. This increase is realized through increased investments in range improvements and through application of improved grazing systems.

Recreation. Wilderness portions of the Hells Canyon National Recreation Area and alpine areas in the Elkhorn and Wallowa Mountains are managed to provide primitive and semiprimitive recreation opportunities. Dispersed recreation in a managed forest setting is emphasized elsewhere. Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative B of the Eagle Cap Wilderness Environmental Assessment which emphasizes prevention of future resource damage.

Wild and Scenic Rivers. No additional rivers are recommended under this alternative.

Landscapes. This alternative substantially reduces visual quality along visually sensitive travel routes.

Transportation. Thirty-seven percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. The remaining 63 percent is nonforested or allocated to other uses in the Hells Canyon NRA and not available for entry. The high level of development required in this alternative requires a high level of new road construction. Other portions of the Forest are currently roaded but do not provide access to some timbered stands. Entering these areas will require additions to the Forest road system totalling some 2,242 miles. Under this alternative, the Forest-wide objective for road management is to limit miles of open road (open on a year-round basis) to 2.5 miles per square mile. In addition, motorized use on winter ranges is restricted to 1.5 miles of open travelway per square mile during the period of time when the big-game animals are using the winter range. Achieving these open road densities will require closing 1,730 miles of existing roads.

It is estimated that road construction in areas which are currently roadless will total 341 miles in the first decade, 230 miles in the second decade, and 37 miles in the third decade. An additional 679 miles of temporary roads will be constructed during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. Eleven research natural areas are proposed in addition to the one existing RNA:

Lightning Creek
Bills Creek
Alum Beds
Little Granite
Boner Flat
Craig Mountain Lake
Indian Creek (existing RNA)
West Razz Pond and Razz Lake
Mt. Joseph
Duck Lake
Vance Knoll
Glacier Lake

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level slightly higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable forest lands (see Appendix G). This represents a level slightly above the minimum area and distribution of mature and old-growth forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to minimally satisfy needs of the goshawk and Townsend's warbler. Fourteen thousand acres of unsuited subalpine forest and 44,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long term, approximately 143,000 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (282,000 acres) ensure the future development of pole thickets and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 524,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Summer ranges are managed emphasizing timber and other commodity production, although a minimal level of elk (big-game) habitat protection is provided through the application of Regional timber harvest dispersion constraints. Timber harvest and road management are constrained to provide a moderate level of elk (big-game) habitat protection on winter ranges.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 600 acres per year of habitat improvement targeted.

Municipal Watersheds. The domestic supply watersheds are managed emphasizing timber production within the overall objective of providing high quality water for domestic use.

Minerals. Of the areas of known mineral potential 205,400 are open to mineral entry with normal coordination requirements, 24,000 have restricted entry, and 193,600 are closed to new mineral entry.

Alternative B-departure (FPFO)

Description

This alternative was formulated with primary emphasis on the timber, forage and local economy issues. Timber outputs are provided at the level prescribed in the Oregon Department of Forestry's Forestry Program for Oregon (FPFO). This program calls for high levels of timber outputs for five decades to mitigate a projected shortfall in timber harvest from private lands. In order to achieve the FPFO timber output levels, it is necessary to depart from nondeclining evenflow (i.e. harvest timber at a high level for the first five decades and substantially reduce harvests in subsequent decades). It is also necessary to harvest many timber stands significantly earlier than culmination of mean annual increment (CMAI). CMAI is the age at which the average annual increment of growth in a timber stand reaches its maximum. Since the National Forest Management Act requires that CMAI be generally reached before harvest occurs, this alternative cannot be implemented without a change in law. This is a distinct alternative. If Alternative B were selected, it would not be possible to convert to Alternative B-departure during the life of the plan.

This alternative also places higher emphasis on range improvements and increased levels of livestock grazing than does Alternative B.

Land uses are the same as for Alternative B.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area none are recommended for wilderness, 60,703 acres are retained in a roadless condition and 174,498 acres are available for development.

Soil and Water. This alternative provides the highest level of investments in soil and watershed improvements (1,500 acres per year).

Timber. Timber harvest is scheduled from 937,000 acres. All available, capable, and tentatively suitable forest lands are available for timber harvest except those lands needed to meet old-growth objectives of this alternative and lands allocated to other uses in the Hells Canyon Comprehensive Management Plan. Areas not scheduled for timber harvest include alpine areas around the perimeter of the Eagle Cap Wilderness and in the Elkhorns. These are limited to nonforest lands or lands which are otherwise unsuited for timber management. Timber harvest is accelerated during the first five decades of implementation and falls significantly in succeeding decades. The sawtimber volume to be sold in the first decade is 36.0 MMCF annually.

For purposes of comparison, pertinent information from Alternative B-departure is compared with data from the 1962 Timber Management Plan (information used by the State of Oregon in developing their projections) in Table II-a).

Livestock Grazing. Permitted annual domestic livestock use is 227,000 AUM's, an increase of 22 percent from recent levels. This is accomplished by managing each range allotment at the most intense level for which it is suited. This requires substantial investment in range improvements and the application of more sophisticated grazing plans. On some allotments the level of investment exceeds the benefits received.

Recreation. Primitive and semiprimitive recreation opportunities are provided within wilderness, portions of the Hells Canyon National Recreation Area, and within alpine areas in the Elkhorn and Wallowa Mountains. Dispersed recreation in a managed forest setting is emphasized elsewhere.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative B of the Eagle Cap Wilderness Environmental Assessment which emphasizes prevention of future resource damage.

Wild and Scenic Rivers. No additional rivers are recommended under this alternative.

Landscapes. This alternative substantially reduces visual quality along visually sensitive routes.

Transportation. Thirty-seven percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. The remaining 63 percent is nonforested or allocated to other uses within the Hells Canyon NRA and is not available for entry. The level of development required in this alternative results in the highest level of new road construction of any alternative. Entering these areas will require additions to the Forest road system totalling an estimated 2,398 miles. The objective for road management is to limit miles of open road (open on a year-round basis) to 2.5 miles per square mile. In addition, motorized use on winter ranges is restricted to 1.5 miles of open travelway per square mile during the period of time when the big-game animals are using the winter range. Achievement of these open road densities will require closure of approximately 1,730 miles of existing roads.

It is estimated that road construction in areas which are currently roadless will total 341 miles in the first decade, 230 miles in the second decade, and 37 miles in the third decade. An additional 679 miles of temporary roads will be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. Eleven research natural areas are proposed in addition to the one existing RNA:

Lightning Creek
Alum Beds
Boner Flat
West Razz Pond and Razz Lake
Duck Lake
Glacier Lake
Bills Creek
Little Granite
Craig Mountain Lake
Mt. Joseph
Vance Knoll
Indian Creek (existing RNA)

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is managed to meet the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable Forest lands (see Appendix G). This represents the minimum area and distribution of mature and old-growth Forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to minimally satisfy needs of the goshawk and Townsend's warbler. Fourteen thousand acres of unsuited subalpine Forest and 11,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long term, approximately 133,000 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (292,000 acres) ensure the future development of pole thickets and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 462,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Summer ranges are managed emphasizing timber and other commodity production, although a minimal level of elk (big-game) habitat protection is provided through the application of Regional timber harvest dispersion constraints. Timber harvest and road management are constrained to provide a moderate level of elk (big-game) habitat protection on winter ranges.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 600 acres per year of habitat improvement targeted.

Municipal Watersheds. The domestic supply watersheds are managed emphasizing commodity production within the overall objective of providing quality water for domestic use.

Minerals. Of the areas of known mineral potential, 205,400 acres are open to mineral entry with normal coordination requirements, 24,000 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Table II-a
DATA COMPARISONS FOR FPFO ALTERNATIVE

1962 Timber Management Plan 1/ Amendment 7	Alternative B-Dep (Forestry Program for Oregon Alternative)	Reason for Change
A. Suitable Lands		
1. Lands available for timber harvest. Acres in Standard, Special and Marginal components upon which a regulated harvest was based 1,285,900 ac.	1. Lands from tentatively suitable land base which were selected for timber harvest in this alternative.	- 139,000 ac. correc. for mapped acres - 61,200 ac. Oregon Wilderness Bill - 77,300 ac. technically unsuited - 91,300 ac. not available for scheduled harvest-HCNRA CMP - 28,200 ac. not available, old-growth - 10,300 ac. not economically efficient - 407,300 ac. total
2. Acres of RARE II roadless areas which were suitable for timber harvest and upon which timber harvest was deferred pending resolution of the roadless issue. These lands were included in the RARE II "further planning areas". 58,300 ac.		
3. Total acres in 1 and 2 ; 1,344,200 ac.	937,300 ac.	- 407,300 ac.
B. Timber Management Intensities		
Number of acres selected and managed for:	Number of acres selected and managed for:	Allocation more commodity-oriented than TM Amendment but economic efficiency dictated lower management intensities.
1. Full Yield (91-100%) 526,304 ac. 2/	1. Full Yield (91-100%) 308,800 ac. 3/	
2. Partial Yield (50-90%) 577,091 ac. 4/	2. Partial Yield (50-90%) 528,000 ac. 4/	
3. Partial Yield (1-4%) 182,476 ac. 4/	3. Partial Yield (1-49%) 100,500 ac. 4/	

C. Other Factors

Oregon FPFO based on 55 year minimum age of harvest. Culmination of Mean Annual Increment constraint (generally 50 years in lodgepole pine and 70 years in other species) released in Alternative B-departure. Oregon FPFO assumes merchantability to 4" top all species; Alternative B-Dep. assumes a four inch top for lodgepole pine, but a six inch top for other species.

1/ Information available during development of the Forestry Program for Oregon.
2/ Generally equates to "standard" areas in TM Plans.
3/ Generally equates to "Timber Emphasis" acres in Forest Plan.
4/ Land classifications/prescriptions which reduce timber yields from "Full Yield."

Alternative C (Proposed Action)

Description

This alternative was formulated to deal with the issues for timber and range by maintaining moderately high outputs of timber and forage for livestock but with greater emphasis on deer and elk habitat than in Alternatives B, B-departure, or D. Emphasis is also placed on the transportation management and recreation diversity issues.

It provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges and on selected summer ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harrassment of big game.

Nonwilderness portions of the North Fork John Day watershed are managed emphasizing anadromous fish habitat protection. A section of the Grande Ronde River is recommended for addition to the National Rivers System, as are sections of the North Fork John Day and the Lostine Rivers.

Alpine and subalpine areas in the Elkhorn Mountains and around the perimeter of the Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. A high level of visual quality is retained. Following is a description by resource.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation area none are recommended for wilderness, 101,498 acres are retained in a roadless condition and 133,703 acres are available for development.

Although timber harvesting will occur within the Joseph Canyon Roadless Area in this alternative, the area will be managed to retain its essentially roadless condition. Logging systems will be utilized which will not require significant new road construction.

Soil and Water. Soil and water restoration work is at significantly higher levels (1,000 acres per year) than has occurred in recent years.

Timber. Timber harvest is scheduled from 832,000 acres. Areas not scheduled for timber harvest include alpine and subalpine areas around the perimeter of the Eagle Cap Wilderness and in the Elkhorn Mountains. Timber management is constrained on winter ranges and some summer ranges to provide better big-game habitat. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 28.3 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 207,000 animal unit months. This represents an increase of 11 percent over recent historical levels. This increase is realized through increased investments in range improvements and through application of improved grazing systems and provides the most economically efficient level of range management.

Recreation. Primitive and semiprimitive recreation opportunities are provided in wilderness, portions of the Hells Canyon National Recreation Area and in alpine and subalpine areas in the Elkhorn and Wallowa Mountains. Portions of the Monument Rock and Grande Ronde Roadless Areas also provide semiprimitive recreation opportunities. The remainder of the Forest is managed to provide recreation opportunities in a managed forest setting. Some big-game summer ranges (selected primarily because of their importance to big-game hunters) are managed to provide a quality hunting experience and high quality habitat.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative C of the Eagle Cap Environmental Assessment which emphasizes rehabilitation, enhancement of opportunities for solitude, and provides a wide range of primitive and unconfined recreation opportunities.

Wild and Scenic Rivers. The following rivers or river segments are recommended for inclusion in the National Rivers System:

River	Segment	Miles	Class 1/
Grande Ronde	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Cr.	18	W 2/
Iostine	Wilderness boundary to Forest boundary	15	R
North Fork John Day	Nonwilderness portion	7	R

Landscapes. This alternative maintains high visual quality in visually sensitive travel routes.

Transportation. Twenty-nine percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. Other portions of the Forest are currently roaded but do not provide access to some timber stands. Completion of the Forest's road system will require

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1/ (W-Wild: S-Scenic: R-Recreational)

2/ Will be coordinated with Umatilla National Forest and/or Bureau of Land Management. Subject to change depending upon the recommendation made for the entire eligible portion of the river.

an additional 1,691 miles of road. The use of the transportation system on winter ranges is restricted so that only 1.5 miles of road per square mile are open to motorized use. In areas where undeveloped dispersed recreation is emphasized, road density is maintained at current levels. Elsewhere on the Forest the goal for road density is not to exceed 2.5 miles per square mile. To achieve the specified open road densities will require closure of 1,745 miles of existing road.

In this alternative, the Five Points drainage will not be made more accessible for motorized use than it is at present, except as necessary to carry out timber sale projects. All new roads will be closed to motorized use.

It is estimated that road construction in areas which are currently roadless will total 303 miles in the first decade, 170 miles in the second decade, and 12 miles in the third decade. An additional 547 miles of temporary road are expected to be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. In addition to the one existing research natural area, 13 areas are recommended for inclusion into the Research Natural Area System:

Lightning Creek
Alum Beds
Boner Flat
West Razz Pond and Razz Lake
Bills Creek
Duck Lake
Government Draw
Indian Creek (existing RNA)
Pleasant Valley
Little Granite
Craig Mountain Lake
Mt. Joseph
Vance Knoll
Glacier Lake

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable Forest lands (see Appendix G). This represents a level substantially above the minimum area and distribution of mature and old-growth Forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to satisfy the needs of the goshawk and Townsend's warbler, with many existing goshawk territories included in the old-growth allocation. Fourteen thousand acres of unsuited subalpine Forest and 53,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long-term, approximately 161,500 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (331,000 acres) ensure the future development of pole thickets and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 568,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Elk (big-game) winter ranges are managed to provide high quality cover and forage conditions. Some summer ranges, because of their importance to elk, are also managed to provide high quality habitat. The remaining summer ranges are managed emphasizing production of commodities, although a minimum level of elk (big-game) habitat protection is provided through application of Regional harvest dispersion constraints.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 600 acres per year of habitat improvement targeted.

Municipal Watersheds. Timber harvest occurs at a reduced level within the Baker and La Grande domestic supply watersheds. Within the overall objective of providing quality water, management within the Sumpter and Wallowa watersheds emphasizes timber production.

Minerals. Of the areas of known mineral potential 195,000 acres are open to mineral entry with normal coordination requirements, 40,000 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Alternative C-departure

Description

This alternative was formulated to emphasize timber, forage and the local economy issues. Emphasis is also placed on deer and elk habitat on selected summer ranges and on recreation diversity and transportation system management. The land allocation for this alternative is identical to that of Alternative C. The timber harvest schedule is adjusted to provide higher harvest levels in the first decade (a departure from nondeclining evenflow). This is a distinct alternative. If Alternative C were selected, it would not be possible to convert to Alternative C-departure during the life of the plan.

The objective of the timber harvest schedule of this alternative is to continue to provide recent historical volumes of nonlodgepole pine sawtimber during the first decade. Local mills are designed principally for board production rather than the total utilization that the cubic foot measure most effectively represents. The scheduling of large volumes of lodgepole pine in the first decade is necessary to capture mortality, existing and potential. Most lodgepole pine on the Forest is dead, or overmature and highly susceptible to beetle attack.

Like Alternative C, Alternative C-departure provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges and on selected summer ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harassment of big game. Nonwilderness portions of the North Fork John Day watershed are managed emphasizing anadromous fish habitat protection. A section of the Grande Ronde River is recommended for addition to the National River System, as are sections of the North Fork John Day and the Lostine Rivers. Alpine, subalpine areas within the Elkhorn Mountains and Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. A high level of visual quality is retained. Following is a description of this alternative by resource.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area none are recommended for wilderness, 101,498 acres are retained in a roadless condition and 133,703 acres are available for development.

Although timber harvesting will occur within the Joseph Canyon Roadless Area in this alternative, the area will be managed to retain its essentially roadless condition. Logging systems will be utilized which will not require significant new road construction.

Soil and Water. Soil and water restoration work occurs at significantly higher levels (1,000 acres per year) than has occurred in recent years.

Timber. Timber harvest is scheduled from 843,000 acres. This is a somewhat larger acreage than in Alternative C, indicating that in order to achieve the higher level harvest assigned to this alternative that it is necessary to harvest from some lands which are economically less efficient for timber management. Timber harvest is constrained on winter ranges and on some summer ranges to provide hiding and thermal cover for big game. Harvest is precluded on alpine and subalpine areas in the Elkhorn and Wallowa Mountains to retain some semiprimitive recreation opportunities. Unlike Alternative B-departure it is possible to implement this departure schedule without harvesting prior to culmination of mean annual increment. The sawtimber volume sold in the first decade is 36.5 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 207,000 animal unit months. This represents an increase of 11 percent over recent historical levels. This increase is realized through increased investments in range improvements and through application of improved grazing systems and provides the most economically efficient level of range management.

Recreation. Primitive and semiprimitive recreation opportunities are provided both in alpine and subalpine areas in the Wallowa and Elkhorn Mountains, the Monument Rock area, and in the Grande Ronde Roadless Area. The remainder of the Forest is managed to provide recreation opportunities in a managed forest setting. Some big-game summer ranges (selected primarily because of their importance to big-game hunters) are managed to provide a quality hunting experience and high quality habitat.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative C of the Eagle Cap Environmental Assessment which emphasizes rehabilitation, enhancement of opportunities for solitude, and provides a wide range of primitive and unconfined recreation opportunities.

Wild and Scenic Rivers. The following rivers or river segments are recommended for inclusion in the National Rivers System:

River	Segment	Miles	Class 1/
Grande Ronde	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Cr.	18	W 2/

1/ (W-Wild: S-Scenic: R-Recreational)

2/ Would be coordinated with Umatilla National Forest and/or Bureau of Land Management. Subject to change depending upon the recommendation made for the entire eligible portion of the river.

River	Segment	Miles	Class 1/
Lostine	Wilderness boundary to Forest boundary	15	R
North Fork John Day	Nonwilderness portion	7	R

1/ (W-Wild: S-Scenic: R-Recreational)

Landscapes. This alternative maintains high visual quality in visually sensitive travel routes.

Transportation. Twenty-nine percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. Completion of the Forest's road system will require an additional 1,999 miles of road. The use of the transportation system on winter ranges is restricted so that only 1.5 miles of road per square mile would be open to motorized use. In areas managed for roadless recreation, road density is maintained at current levels. Elsewhere on the Forest the goal for open road density is to not exceed 2.5 miles per square mile. To achieve the specified open road densities will require closure of 1,745 miles of existing road.

In this alternative, the Five Points drainage will not be made more accessible for motorized use than it is at present, except as necessary to carry out timber sale projects.

It is estimated that road construction in areas which are currently roadless will total 303 miles in the first decade, 170 miles in the second decade, and 12 miles in the third decade. An additional 547 miles of temporary roads are expected to be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. In addition to the one existing research natural area, 13 areas are recommended for inclusion into the Research Natural Area System:

Lightning Creek
Alum Beds
Boner Flat
West Razz Pond and Razz Lake
Bills Creek
Duck Lake
Government Draw
Indian Creek (existing RNA)
Pleasant Valley
Little Granite
Craig Mountain Lake
Mt. Joseph
Vance Knoll
Glacier Lake

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable forest lands (see

Appendix G). This represents a level substantially above the minimum area and distribution of mature and old-growth forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to satisfy needs of the goshawk and Townsend's warbler, with many existing goshawk territories included in the old-growth allocation. Fourteen thousand acres of unsuited subalpine forest and 51,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long-term, approximately 158,700 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (392,000 acres) ensure the future development of pole thickets and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 556,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Elk (big-game) winter ranges are managed to provide high quality cover and forage conditions. Some summer ranges, because of their importance to elk, are also managed to provide high quality habitat. The remaining summer ranges are managed emphasizing production of commodities, although a minimum level of elk (big game) habitat protection is provided through application of Regional harvest dispersion constraints.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 600 acres per year of habitat improvement targeted.

Municipal Watersheds. The Baker and La Grande domestic supply watersheds are managed with a reduced rate of timber harvest. Within the overall objective of providing quality water, management within the Sumpter and Wallowa watersheds emphasizes timber production.

Minerals. Of the areas of known mineral potential, 195,000 acres are open to mineral entry with normal coordination requirements, 34,400 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Alternative D

Description

This alternative was formulated to deal with the issues for timber and range by maintaining moderately high outputs of timber and forage for livestock but with greater emphasis on deer and elk habitat than in Alternatives B or B-departure though less than in Alternatives C or C-departure. Emphasis is also placed on the transportation management and recreation diversity issues. It provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harrassment of big game. Nonwilderness portions of the North Fork John Day Watershed are managed to protect anadromous fish habitat but with more emphasis on commodity production than in Alternative C. A section of the Grande Ronde River is recommended for addition to the National Rivers System, as are sections of the North Fork John Day and the Lostine Rivers. Alpine and subalpine areas in the Elkhorn Mountains and around the perimeter of the Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. A high level of visual quality is retained. Following is a description by resource.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area none are recommended for wilderness, 98,019 acres are retained in a roadless condition and 137,183 acres are available for development.

Soil and Water. Soil and water restoration work is at significantly higher levels (1,000 acres per year) than has occurred in recent years.

Timber. Timber harvest is scheduled from 844,000 acres. Areas not scheduled for timber harvest include alpine and subalpine areas around the perimeter of the Eagle Cap Wilderness and in the Elkhorn Mountains. Timber management is constrained on winter ranges to provide better big-game habitat. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 30.2 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 212,000 animal unit months. This represents an increase of 14 percent over recent historical levels. This increase is realized through increased investments in range improvements and through application of improved grazing systems. On 11 allotments the management is at a higher intensity than in Alternative C.

Recreation. Primitive and semiprimitive recreation opportunities are provided in wilderness, portions of the Hells Canyon National Recreation Area and in alpine and subalpine areas in the Elkhorn and Wallowa Mountains. The Grande Ronde Roadless Area also provides semiprimitive recreation opportunities. The remainder of the Forest is managed to provide recreation opportunities in a managed forest setting.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative C of the Eagle Cap Environmental Assessment which emphasizes rehabilitation, enhancement of opportunities for solitude, and provides a wide range of primitive and unconfined recreation opportunities.

Wild and Scenic Rivers. The following rivers or river segments are recommended for inclusion in the National Rivers System:

River	Segment	Miles	Class 1/
Grande Ronde	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Cr.	18	W 2/
Lostine	Wilderness boundary to Forest boundary to 1/2 mile below Grossman Cr.	15	R
North Fork John Day	Nonwilderness portion	7	R

1/ (W-Wild: S-Scenic: R-Recreational)

2/ Will be coordinated with Umatilla National Forest and/or Bureau of Land Management. Subject to change depending upon the recommendation made for the entire eligible portion of the river.

Landscapes. This alternative maintains high visual quality in visually sensitive travel routes.

Transportation. Thirty-one percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. Completion of the Forest's road system will require an additional 1,939 miles of road. The use of the transportation system on winter ranges is restricted so that only 1.5 miles of road per square mile are open to motorized use. In areas where undeveloped recreation is emphasized, road density is maintained at current levels. Elsewhere on the Forest the goal for road density is to not exceed 2.5 miles per square mile. To achieve the specified open road densities will require closure of 1,725 miles of existing road.

In this alternative, the Five Points drainage will not be made more accessible for motorized use than it is at present, except as necessary to carry out timber sale projects. New roads will be closed to motorized use. It is estimated that road construction in areas which are currently roadless will total 298 miles in the first decade, 184 miles in the second decade, and 12 miles in the third decade. An additional 550 miles of temporary roads are expected to be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. In addition to the one existing research natural area, 13 areas are recommended for inclusion into the Research Natural Area System:

- Lightning Creek
- Alum Beds
- Boner Flat
- West Razz Pond and Razz Lake
- Bills Creek
- Duck Lake
- Government Draw
- Indian Creek (existing RNA)
- Pleasant Valley
- Little Granite
- Craig Mountain Lake
- Vance Knoll
- Glacier Lake
- Mount Joseph

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable forest lands (see Appendix G). This represents a level substantially above the minimum area and distribution of mature and old-growth forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to satisfy needs of the goshawk and Townsend's warbler, with many existing goshawk territories included in the old-growth allocation. Fourteen thousand acres of unsuited subalpine forest and 48,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide over the long term approximately 158,300 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (270,000 acres) ensure the future development of pole thickets and dense young to mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 556,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Elk (big-game) winter ranges are managed to provide high quality cover and forage conditions. Summer ranges are managed emphasizing timber and other commodity production, although a minimal level of elk (big-game) habitat protection is provided through the application of Regional timber harvest dispersion constraints.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. Moderate emphasis is placed on anadromous fish habitat improvement, with about 174 acres per year of habitat improvement targeted.

Municipal Watersheds. Within the overall objective of providing quality water the domestic supply watersheds are managed emphasizing timber production.

Minerals. Of the areas of known mineral potential 95,000 acres are open to mineral entry with normal coordination requirements, 34,400 acres have restricted entry because of the strategy under which they are managed in this alternative, and 193,600 acres are closed to new mineral entry.

Alternative E

Description

This alternative was formulated emphasizing issues related to undeveloped areas, transportation system management, recreation diversity, and timber management. All existing roadless areas are retained in a roadless condition. This serves to retain the existing opportunities for semiprimitive and primitive types of recreation. Outside of the existing roadless areas production of commodity outputs is emphasized. A low level of habitat protection is provided on big-game winter ranges. Use of roads on winter ranges is restricted to reduce harrassment of big game. Sections of the Grande Ronde, Lostine, North Fork John Day, and North Powder Rivers are recommended for addition to the National Rivers System, totalling 36 miles. Visual quality is substantially reduced outside of roadless areas. Following is a description of this alternative by resource.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area 1,013 acres are recommended for wilderness (the Dunns Bluff Roadless Area which was not considered during RARE or the Oregon Wilderness Act of 1984), and 234,188 acres are retained in a roadless condition.

Soil and Water. This alternative provides a low level of soil and water resource improvement (500 acres per year) compared to most other alternatives, but higher than recent historical levels.

Timber. Timber harvest is scheduled from 802,000 acres. All roadless lands outside the Hells Canyon National Recreation Area are excluded from timber harvest. Timber management is constrained on winter ranges to provide better big-game habitat. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 29.1 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 181,000 animal unit months, three percent below recent historical levels. All allotments are managed at their most economically efficient level except that grazing is eliminated or reduced on ranges where soil or other resource damage is occurring within roadless areas.

Recreation. Primitive and semiprimitive recreation opportunities are provided in wilderness, portions of the Hells Canyon National Recreation Area and in most roadless areas. The remainder of the Forest is managed to provide recreation opportunities in a managed forest setting.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

__Wilderness__. The Eagle Cap Wilderness is managed under Alternative C of the Eagle Cap Environmental Assessment which emphasizes rehabilitation, enhancement of opportunities for solitude, and provides a wide range of primitive and unconfined recreation opportunities.

__Wild and Scenic Rivers__. The following rivers or river segments are recommended for inclusion in the National Rivers System:

River	Segment	Miles	Class 1/
Grande Ronde	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Cr.	8	W 2/
Lostine	Wilderness boundary to Forest boundary	15	R
North Fork John Day	Nonwilderness portion	7	R
North Powder River	Origin to National Forest Boundary	6	W

1/ (W-Wild: S-Scenic: R-Recreational)

2/ Will be coordinated with Umatilla National Forest and/or Bureau of Land Management. Subject to change depending upon the recommendation made for the entire eligible portion of the river.

__Landscapes__. This alternative reduces visual quality in visually sensitive travel routes.

__Transportation__. None of the existing roadless areas of the Forest are accessed for timber harvest under this alternative. Some portions of the Forest are currently roaded but need additional access. Completion of the Forest's road system will require an additional 1,879 miles of road. The use of the transportation system on winter ranges is restricted so that only 1.5 miles of road per square mile are open to motorized use. In areas where undeveloped recreation is emphasized, road density is maintained at current levels. Elsewhere on the Forest the goal for road density is not to exceed 2.5 miles per square mile. To achieve the specified open road densities will require closure of 1,725 miles of existing road. No road construction within roadless areas is expected.

__Research__. In addition to the one existing research natural area, 13 areas are recommended for inclusion into the Research Natural Area System:

Lightning Creek
Alum Beds
Boner Flat
West Razz Pond and Razz Lake
Bills Creek

Pleasant Valley
Little Granite
Craig Mountain Lake
Vance Knoll
Glacier Lake

Duck Lake
Government Draw
Indian Creek (existing RNA)

Mount Joseph

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level slightly higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable Forest lands (see Appendix G). This represents a level slightly above the minimum area and distribution of mature and old-growth Forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to minimally satisfy needs of the goshawk and Townsend's warbler. Fourteen thousand acres of unsuited subalpine Forest and 58,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long-term, approximately 166,700 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (240,000 acres) ensure the future development of pole thickets and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 598,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Summer ranges are managed emphasizing timber and other commodity production, although a minimal level of elk (big-game) habitat protection is provided through the application of Regional timber harvest dispersion constraints. Timber harvest and road management are constrained to provide a moderate level of elk (big-game) habitat protection on winter ranges.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 528 acres per year of habitat improvement targeted.

Municipal Watersheds. Within the overall objective of providing quality water, the Baker domestic supply watershed is managed emphasizing nondevelopment (no scheduled timber harvest) while the other watersheds are managed emphasizing timber production.

Minerals. Of the areas of known mineral potential 183,200 acres are open to mineral entry with normal coordination requirements, 46,200 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Alternative F

Description

This alternative was formulated emphasizing the wildlife habitat, recreation diversity, old-growth forest, and transportation system management issues. It also provides a high level of protection and enhancement of anadromous fisheries. Approximately 70 percent of the roadless area outside the Hells Canyon National Recreation Area remains in a roadless condition. Rivers recommended for inclusion in the National Rivers System total 85 miles. All watersheds used by anadromous fish are managed emphasizing fish habitat protection and enhancement. This includes the Grande Ronde, Wallowa, and North Fork John Day River systems and that portion of the Imnaha River system not in the National Recreation Area. Timber is managed to provide snags for wildlife at not less than the 40 percent level across the Forest. Both winter and summer big-game ranges provide high quality big-game habitat. A description of this alternative, by resource, follows.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area 1,013 acres are recommended for wilderness, 143,331 acres are retained in a roadless condition and 91,870 acres are available for development.

Although timber harvesting will occur within the Joseph Canyon Roadless Area in this alternative, the area will be managed to retain its essentially roadless condition. Logging systems will be utilized which will not require significant new road construction.

Soil and Water. Soil and water restoration work is at significantly higher levels (500 acres per year) than has occurred in recent years but is at a lower level than most other alternatives.

Timber. Timber harvest is scheduled from 788,000 acres. Areas not scheduled for timber harvest include alpine and subalpine areas around the Elkhorn Mountains. Also not scheduled are part of the Monument Rock Roadless Area, The Mount Emily Roadless Area, all roadless areas around the Eagle Cap Wilderness and the Grande Ronde Roadless Area. Timber management is constrained on winter ranges and summer ranges to meet wildlife and fisheries objectives. Timber harvest is scheduled on a nondeclining even-flow basis. The sawtimber volume to be sold in the first decade is 21.5 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 159,000 animal unit months. This represents a decrease of 15 percent from recent historical levels. A major objective for range management under this alternative is to reduce costs. On range allotments where soil and resource damage are occurring, grazing by domestic livestock is reduced or eliminated.

Recreation. Primitive and semiprimitive recreation opportunities are provided in wilderness, portions of the Hells Canyon National Recreation Area and in alpine and subalpine areas in the Elkhorn and in numerous areas around the Eagle Cap Wilderness. Portions of the Monument Rock, Grande

Ronde, and Mount Emily Roadless Areas also provide semiprimitive recreation opportunities. The remainder of the Forest is managed to provide recreation opportunities in a managed forest setting. Both summer and winter ranges are managed emphasizing wildlife and fisheries, providing a high quality recreation experience.

Recreation site construction and reconstruction is at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative D of the Eagle Cap Environmental Assessment with emphasis on maintaining pristine conditions, letting natural processes operate with as little evidence of man as possible.

Wild and Scenic Rivers. The following rivers or river segments are recommended for inclusion in the National Rivers System:

River	Segment	Miles	Class 1/
Grande Ronde	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Cr.	18	W 2/
Lostine	Wilderness boundary to Forest boundary	15	R
North Fork John Day	Nonwilderness portion	7	R
Eagle Creek	Wilderness boundary to Forest boundary	22	R
North Powder River	Origin to Forest boundary	6	W
Joseph Creek	Crow Creek Bridge to Joseph Creek Ranch	6	R
Joseph Creek	Joseph Creek Ranch to Forest Boundary	11	W

1/ (W-Wild; S-Scenic; R-Recreational)

2/ Will be coordinated with Umatilla National Forest and/or Bureau of Land Management. Subject to change depending upon the recommendation made for the entire eligible portion of the river.

Landscapes. This alternative maintains high visual quality in visually sensitive travel routes.

Transportation. Nineteen percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. Completion of the Forest's road system will require an additional 1,236 miles of road. The use of the transportation system is restricted so that only 1.5 miles of road per square mile across the Forest are open to motorized use. On winter ranges this restriction applies during the period of time when big game are using the range. On summer ranges the 1.5 mile road density applies year long. In areas emphasizing undeveloped recreation, road density is maintained at current levels. To achieve the specified open road densities will require closure of 2,670 miles of existing road.

It is estimated that road construction in areas which are currently roadless will total 183 miles in the first decade, 86 miles in the second decade, and 3 miles in the third decade. An additional 224 miles of temporary roads are expected to be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. In addition to the one existing research natural area, 13 areas are recommended for inclusion into the Research Natural Area System:

Lightning Creek
Alum Beds
Boner Flat
West Razz Pond & Razz Lake
Bills Creek
Duck Lake
Government Draw
Indian Creek (existing RNA)

Pleasant Valley
Little Granite
Craig Mountain Lake
Vance Knoll
Glacier Lake
Mount Joseph

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level nearly double that necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable forest lands (see Appendix G). This is the best distribution of old-growth of any alternative and represents a level substantially above the minimum area and distribution of mature and old-growth forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to well satisfy needs of the goshawk and Townsend's warbler, with most existing goshawk territories included in old-growth allocations. Fourteen thousand acres of unsuited subalpine forest and 68,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long-term, approximately 174,600 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (491,000 acres) ensure the future development of pole thickets and dense young-to-mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 611,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Elk (big-game) winter ranges and summer ranges are managed to provide high quality cover and forage conditions.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 600 acres per year of habitat improvement targeted.

Municipal Watersheds All domestic supply watersheds are managed with a reduced rate of timber harvest.

Minerals. Of the areas of known mineral potential, 190,200 acres are open to mineral entry with normal coordination requirements, 39,200 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Alternative G

Description

Alternative G was formulated in a manner identical to Alternative B except that timber harvest is limited to stands and practices having a positive present net value (meaning the monetary benefits of managing the existing and future stands of timber on a particular piece of land are greater than the monetary costs -- also see Glossary). This alternative reflects the National concern over timber sales which are sold below cost.* Under this alternative few, if any, below-cost timber sales are expected. This results in a substantial reduction in timber outputs from Alternative B and an increase in present net value. Other differences include reduced economic stability in local communities and reduced adverse impacts on other resources such as wildlife. In this alternative the Lake Fork Roadless Area is economically unsuited for development, hence the only difference in land allocations between Alternatives B and G.

This alternative was formulated with primary emphasis on issue goals for timber, livestock forage, and local economy issues. Timber harvest and road management activities on winter ranges are restricted to better meet big-game needs. Visual quality is reduced.

Roadless Areas. Of the 235,201 acres of inventoried roadless areas outside the Hells Canyon National Recreation Area, none are recommended for wilderness, 75,601 acres are retained in a roadless condition and 159,600 acres are available for development.

Soil and Water. Soil and water improvement is at a level substantially higher (500 acres per year) than recent historical levels but is lower than most other alternatives.

Timber. Timber harvest is scheduled from 801,000 acres. All available, capable, and tentatively suitable forest lands are available for timber harvest except for those lands needed to meet the old-growth objectives of this alternative and for lands allocated to other uses in the Hells Canyon Comprehensive Management Plan. Areas not scheduled for timber harvest include alpine areas near the Eagle Cap Wilderness and in the Elkhorn Mountains. These are limited to nonforest lands or lands which are otherwise unsuited for timber management. An additional 74,000 acres were not scheduled for harvest by the FORPLAN model because they were economically inefficient for harvest under this alternative. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 25.8 MMCF annually.

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*Below-cost sales are those which cost more to prepare than they return in revenue. These are not necessarily the same as deficit sales. Deficit sales are those from which an average purchaser would not expect at least an average profit.

Livestock Grazing. Permitted annual domestic livestock use is 186,000 animal unit months (AUM's). This represents continuation of the current grazing level. Increased investment in range improvements is necessary.

Recreation. Wilderness, portions of the Hells Canyon National Recreation Area, alpine areas and the Lake Fork Roadless Area are managed to provide primitive and semiprimitive recreation opportunities. Dispersed recreation in a managed forest setting is emphasized elsewhere.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative B of the Eagle Cap Wilderness Environmental Assessment which emphasizes prevention of future resource damage.

Wild and Scenic Rivers. No additional rivers are recommended under this alternative.

Landscapes. This alternative substantially reduces visual quality along visually sensitive travel routes.

Transportation. Thirty-four percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. The remaining 66 percent is nonforested or is allocated to other uses in the Hells Canyon NRA and are not available for entry or are economically inefficient in this alternative. The high level of development required in this alternative would result in a relatively high level of new road construction. Entering these areas will require additions to the Forest road system totalling some 1,730 miles of new road. The objective for road management is to limit miles of open road (open on a year-round basis) to 2.5 miles per square mile. In addition, motorized use on winter ranges is restricted to 1.5 miles of open travelway per square mile during the period of time when the big-game animals are using the winter range. Achieving these open road densities will require closing 1,730 miles of existing road.

It is estimated that road construction in areas which are currently roadless will total 305 miles in the first decade, 207 miles in the second decade, and 36 miles in the third decade. An additional 575 miles of temporary roads are expected to be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. Eleven research natural areas are proposed in addition to the one existing RNA:

- Lightning Creek
- Bills Creek
- Alum Beds
- Little Granite
- Boner Flat
- Craig Mountain Lake
- Indian Creek (existing RNA)
- West Razz Pond and Razz Lake
- Mt. Joseph
- Duck Lake
- Vance Knoll
- Glacier Lake

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level slightly higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable forest lands (see Appendix G). This represents a level slightly above the minimum area and distribution of mature and old-growth forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to minimally satisfy needs of the goshawk and Townsend's warbler. Fourteen thousand acres of unsuited subalpine forest and 107,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long-term, approximately 150,600 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (464,000 acres) ensure the future development of pole thickets and dense young to mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 599,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Summer ranges are managed emphasizing timber and other commodity production, although a minimal level of elk (big-game) habitat protection is provided through the application of Regional timber harvest dispersion constraints. Timber harvest and road management are constrained to provide a moderate level of elk (big-game) habitat protection on winter ranges.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. Less emphasis is placed on anadromous fish habitat improvement compared to other alternatives, with about 84 acres per year of habitat improvement targeted.

Municipal Watersheds. The domestic supply watersheds are managed emphasizing timber production within the overall objective of providing quality water.

Minerals. Of the areas of known mineral potential 205,400 acres are open to mineral entry with normal coordination requirements, 24,000 acres have restricted entry because of the strategy they are managed under in this alternative, and 193,600 acres are closed to new mineral entry.

Alternative H

Description

This alternative was formulated to deal with the issues for timber and range by maintaining moderately high outputs of timber and forage for livestock but with greater emphasis on deer and elk habitat than in Alternatives B, B-departure, or E. It has land allocations which are identical to Alternative C and provides the same level of grazing for domestic livestock. The only significant difference between Alternatives C and H is that Alternative H emphasizes economic efficiency in timber management more than C does. This tends to reduce such activities as tree planting, site preparation, and precommercial thinning. Like Alternative C, emphasis is also placed on the transportation management and recreation diversity issues. It provides near-optimum hiding cover, thermal cover and forage conditions on big-game winter ranges and on selected summer ranges. Use of roads within big-game habitat emphasis areas is restricted to reduce harrassment of big game. Nonwilderness portions of the North Fork John Day watershed are managed emphasizing anadromous fish habitat protection. A section of the Grande Ronde River is recommended for addition to the National Rivers System, as are sections of the North Fork John Day and the Lostine Rivers. Alpine and subalpine areas in the Elkhorn Mountains and around the perimeter of the Wallowa Mountains remain in a roadless condition to provide additional semiprimitive recreation opportunities. A high level of visual quality is retained. Following is a description by resource.

Roadless Areas. Of the 235,201 acres of inventoried roadless area outside the Hells Canyon National Recreation Area, none are recommended for wilderness, 101,498 acres are retained in a roadless condition and 133,203 acres are available for development. Although timber harvesting will occur within the Joseph Canyon Roadless Area in this alternative, the area will be managed to retain its essentially roadless condition. Logging systems will be utilized which will not require significant new road construction.

Soil and Water. Soil and water restoration work is at significantly higher levels (1,000 acres per year) than has occurred in recent years.

Timber. Timber harvest is scheduled from 784,000 acres. Areas not scheduled for timber harvest include alpine and subalpine areas around the perimeter of the Eagle Cap Wilderness and in the Elkhorn Mountains. Timber management is limited on winter ranges and some summer ranges to provide better big-game habitat. About 91,000 acres of available forest lands are economically unsuited under this alternative. Timber harvest is scheduled on a nondeclining evenflow basis. The sawtimber volume to be sold in the first decade is 25.2 MMCF annually.

Livestock Grazing. Permitted annual domestic livestock use is 177,000 animal unit months (AUM's). This represents a five percent reduction from recent historical levels.

Recreation. Primitive and semiprimitive recreation opportunities are provided in wilderness, portions of the Hells Canyon National Recreation Area and in alpine and subalpine areas in the Elkhorn and Wallowa Mountains. Portions of the Monument Rock and Grande Ronde Roadless Areas also provide semiprimitive recreation opportunities. The remainder of the Forest is managed to provide recreation opportunities in a managed forest setting. Some big-game summer ranges (selected primarily because of their importance to big-game hunters) are managed to provide a quality hunting experience and high quality habitat.

Recreation site construction and reconstruction are at a rate of 550 PAOT capacity per year for the first decade, completing the development directed in the Hells Canyon National Recreation Area Comprehensive Management Plan. Reconstruction continues at a rate of 50 PAOT per year for the remainder of the plan period.

Wilderness. The Eagle Cap Wilderness is managed under Alternative C of the Eagle Cap Environmental Assessment which emphasizes rehabilitation, enhancement of opportunities for solitude, and provides a wide range of primitive and unconfined recreation opportunities.

Wild and Scenic Rivers. The following rivers are recommended under this alternative.

River	Segment	Miles	Class 1/
Grande Ronde	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Cr.	18	W 2/
Lostine	Wilderness boundary to Forest boundary	15	R
North Fork John Day	Nonwilderness portion	7	R

1/ (W-Wild: S-Scenic: R-Recreational)

2/ Will be coordinated with Umatilla National Forest and/or Bureau of Land Management. Subject to change depending upon the recommendation made for the entire eligible portion of the river.

Landscapes. This alternative maintains high visual quality in visually sensitive travel routes.

Transportation. Twenty-nine percent of the total existing roadless area of the Forest is accessed for timber harvest under this alternative. Completion of the Forest's road system will require an additional 1,604 miles of road, the lowest level of any alternative. The use of the transportation system on winter ranges is restricted so that only 1.5 miles of road per square mile would be open to motorized use. In areas managed to emphasize undeveloped recreation, road density will be maintained at current levels.

Elsewhere on the Forest the goal for road density is to not exceed 2.5 miles per square mile. To achieve the specified open road densities will require closure of 1,745 miles of existing road.

In this alternative, the Five Points drainage will not be made more accessible for motorized use than it is at present, except as necessary to carry out timber sale projects. All new roads will be closed to motorized use.

It is estimated that road construction in areas which are currently roadless will total 304 miles in the first decade, 170 miles in the second decade, and 12 miles in the third decade. An additional 515 miles of temporary road are expected to be built during the same time period. No significant additions to the road system are anticipated after the third decade.

Research. In addition to the one existing research natural area, 13 areas are recommended for inclusion into the Research Natural Area System:

Lightning Creek
Alum Beds
Boner Flat
West Razz Pond and Razz Lake
Bills Creek
Duck Lake
Government Draw
Indian Creek (existing RNA)
Pleasant Valley
Little Granite
Craig Mountain Lake
Mt. Joseph
Vance Knoll
Glacier Lake

Fish and Wildlife. The Forest will participate in reestablishing eight pairs of bald eagle and four pairs of peregrine falcon. These are the recovery objective levels described in Chapter III.

Old-growth forest is provided at a level higher than necessary to satisfy the minimum management requirements (MMR's) for the pileated woodpecker, pine marten and three-toed woodpecker on available, capable forest lands (see Appendix G). This represents a level substantially above the minimum area and distribution of mature and old-growth forest required to provide viable populations of dependent wildlife species "well distributed in the planning area" (36 CFR 219.19). This distribution of old-growth is expected to satisfy needs of the goshawk and Townsend's warbler, with many existing goshawk territories included in the old-growth allocation. Fourteen thousand acres of unsuited subalpine forest and 72,000 acres of uneconomic lodgepole pine augment this old-growth habitat for pine marten and three-toed woodpeckers. This alternative will provide, over the long-term, approximately 162,000 acres of old-growth habitat, including large reserves of old-growth in wilderness, the HCNRA, and unsuited lands.

Timber managed without thinnings (372,000 acres) ensure the future development of pole thickets and dense young to mature forest stands to the benefit of sharp-shinned hawks and Cooper's hawks.

Habitat for those primary cavity excavators relying on smaller snags is expected to exceed the 40 percent level of effectiveness through natural mortality in managed stands. Habitat effectiveness for all cavity nesters will be managed at or above the 60 percent level in riparian zones and throughout the Hells Canyon National Recreation Area. High snag levels on 615,000 acres of unsuitable lands (including wilderness and old-growth) will occur to the benefit of all primary cavity excavators.

Elk (big-game) winter ranges are managed to provide high quality cover and forage conditions. Some summer ranges, because of their importance to elk, are also managed to provide high quality habitat. The remaining summer ranges are managed emphasizing production of commodities, although a minimum level of elk (big-game) habitat protection is provided through application of Regional harvest dispersion constraints.

State water quality goals will be met. Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of the yellow warbler and salmonid fishes. High emphasis is placed on anadromous fish habitat improvement, with about 600 acres per year of habitat improvement targeted.

Minerals. Of the areas of known mineral potential 195,000 acres are open to mineral entry with normal coordination requirements, 34,400 acres have restricted entry, and 193,600 acres are closed to new mineral entry.

Municipal Watersheds. The Baker and La Grande domestic supply watersheds are managed with a reduced rate of timber harvest.

Management Strategies (MS's)

Each alternative distributes the lands of the Forest to different management areas managed under different management strategies. Acreages in the different management areas vary from one alternative to another (see Table II-2).

A management strategy is a cost-efficient combination of management practices and intensities selected and scheduled to attain certain goals and objectives. A management area is the unit of land to which a management strategy is applied. The management area locations can be found on the alternative maps accompanying this Draft Environmental Impact Statement. In essence, the management area is a unit of land to be managed for certain goals and objectives, to achieve a desired condition in the future. For each acre of the Forest, several management strategies may be applied, each of which would achieve a different future condition. Therefore, there are many potential management areas that may be used in developing alternatives. While the number of acres in each management area may vary by alternative--depending on the suitability of available land for each management strategy and the guiding goals and objectives and economic criteria used to select appropriate acres for the alternative--the management strategy applied in each management area remains constant.

Although certain renewable resources are emphasized in each of the following descriptions, each management strategy provides for a combination of Forest uses. All management strategies provide water, wildlife, forage, protection of riparian habitat and many forms of recreation; many provide timber yields. Management direction identifies the renewable resource use which has highest priority and therefore tends to limit the output levels of other resources which may be competing on the same land.

The following are brief descriptions of the management strategies for the Wallowa-Whitman National Forest. Detailed descriptions are found in the Proposed Forest Land and Resource Management Plan accompanying this DEIS.

Management Strategy 1

Management emphasizes wood fiber production while providing relatively high levels of forage and recreational opportunities. Temporary forage increases result from silvicultural activities. Timber is managed according to standards and guidelines common to all management areas (see Appendix D). Timber management provides a mixture of even-aged stands (uneven-aged stands may occur in riparian and visual emphasis areas within Management Area 1) up to 40 acres in size. These stands are to be managed at intensities promoting vigorous, healthy trees commensurate with the productive potential of the sites. Regeneration harvest units will be separated by uncut stands containing one or more logical logging units. Regeneration harvest of units adjacent to an existing regenerated unit will not be initiated until the desired crop tree stocking on the existing unit reaches 4.5 feet in height. This mixture of stand ages and sizes provides a degree of diversity for aesthetics, wildlife and a high level of wood fiber and forage production. Open roads are normally limited to 2.5 miles per square mile.

Management Strategy 2

Management Strategy 2 emphasizes wood fiber and forage production although timber harvest scheduling is constrained to provide greater recreational variety (especially hunting experiences) and wildlife diversity than is found in Management Strategy 1.

Timbered areas consist of timber stands (40 acres or less) of a variety of ages. Regeneration harvest of units adjacent to an existing regenerated unit is not to be initiated until 80 percent of the desired crop tree stocking on the existing unit reaches ten feet in height.

Management Strategy 3

This strategy emphasizes big-game habitat while providing relatively high levels of timber production. Like Management Strategies 1 and 2, this management strategy provides a broad array of Forest uses and outputs. However, management emphasizes maintenance of high quality big-game (particularly elk) habitat and more challenging hunting opportunities.

Timber harvest is the primary tool for managing big-game habitat. When in a managed condition, timbered areas are a mosaic of even-aged stands, 40 acres or less in size. These stands are of different ages and are dispersed to provide a mixture of forage areas, thermal cover, and hiding cover. Like

Management Strategy 2, regenerated trees must be ten-feet tall before harvesting adjacent units, but in Management Strategy 3 additional restrictions apply to any harvest which reduces hiding or thermal cover, in order to better achieve optimum distributions of cover for elk. Open public road access during critical periods of big-game use is generally not more than 1.5 miles per square mile.

Management Strategy 4 (Wilderness)

The intent is to preserve the wilderness resource of these areas. These areas are managed in accordance with the Wilderness Act of 1964, P. L. 94-199 (establishing the Hells Canyon Wilderness) and the 2320 section of the Forest Service Manual. The existing 582,700 acres of wilderness are common to all alternatives.

The intent of the Wilderness Act is to preserve and protect the natural condition and characteristics of designated lands and to provide for current and future public enjoyment of these areas and their wilderness character. These areas remain essentially unaltered and undisturbed by man, with natural ecological processes (including the natural role of fire) permitted to operate with a minimum of human interference.

Management Strategy 5 (Phillips Lake Area)

This area includes Mason Dam, Phillips Lake and surrounding lands, as described in the Reservoir Area Management Plan of March 1971. The area is to be managed recognizing a variety of resource values with emphasis on recreation opportunities.

Timber resources are managed to provide an aesthetically pleasing forest for public enjoyment. Timber stands are maintained in a thrifty condition with tree spacing providing a park-like appearance at least at some periods during a stand's life.

Management Strategy 6

Management emphasizes opportunities for those dispersed recreation activities usually recognized within relatively large undeveloped areas outside wilderness. The recreation activities usually involve combinations of viewing scenery, hunting, fishing, rock hunting, observing wildlife, snowshoeing, cross-country skiing, camping, hiking, backpacking and harvesting of minor products such as mushrooms and berries.

These areas are to remain relatively natural and undeveloped. A road density level similar to 1985 levels will be maintained. Although recreational site development is not precluded under this management strategy, the intent is to emphasize primitive and semiprimitive recreation opportunities. These areas will be accessed largely by trail with some trails or primitive roads open to motorized use. Timber harvest is permitted in the event of catastrophic tree mortality.

Management Strategy 7

Management is intended to preserve the wild, scenic, and recreational values of those rivers or river segments recommended for inclusion in the National Rivers System. The objective is to maintain the characteristics of the recommended river sections at or above the minimum levels required for inclusion, pending a decision by Congress. Recommended rivers or river sections will be managed to maintain those characteristics which contribute to the recommended classification. (Also see Wild and Scenic Rivers Act, Public Law 90-542).

Management Strategy 8 (HCNRA)

This area includes the wild and scenic river corridor along the Snake River within the Hells Canyon National Recreation Area and is common to all alternatives. The primary emphasis is on maintaining the recreation experiences available at the time the area was established. Maintenance of visual qualities is especially important as is the management of people. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 9 (HCNRA)

In these areas all activities will be managed to provide opportunities for dispersed recreation and to enhance native vegetation. It is envisioned that these areas will eventually be almost entirely occupied by native plant species. Range condition will be satisfactory and this condition will be achieved and maintained primarily by nonstructural means. These areas will provide a mix of primitive, semiprimitive nonmotorized and semiprimitive motorized recreation opportunities. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 10 (HCNRA)

This management strategy is applied to grasslands interwoven with timbered stringers in the Hells Canyon National Recreation Area and is common to all alternatives. It is intended that the grassland portions of these areas will be managed to provided maximum forage production with ranges maintained in satisfactory condition and structural improvements being rustic in nature. Timbered portions will provide old-growth habitat at approximately current levels. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 11 (HCNRA)

These areas combine dispersed recreation with timber management on the more productive timber growing sites within the NRA. Use of this strategy is constant throughout all alternatives.

The overriding objective is, through timber management, to provide a variety of tree species and a diversity of healthy timber stands, conducive to dispersed types of recreation. Management of this area is detailed in the Comprehensive Management Plan for the Hells Canyon National Recreation Area.

Management Strategy 12 (Research Natural Areas)

Research natural areas (RNA's) are intended to promote and protect natural diversity. RNA's typify important forest, shrubland, grassland, alpine, aquatic and geologic types and other natural situations that have special and unique characteristics of scientific interest and importance. Activities in RNA's are limited to research, study, observations, monitoring, and kinds of educational activities that are nondestructive and nonmanipulative.

Management Strategy 13 (Homestead Further Planning Area)

This strategy applies to that portion of the Homestead Further Planning Area under Forest Service management and is common to all alternatives. The USDI Bureau of Land Management, which manages the largest share of the further planning area, is responsible for preparing a recommendation to Congress either for wilderness or nonwilderness use. This area will be managed to preserve wilderness characteristics until the detailed study can be completed and Congress determines whether or not wilderness is the most suited allocation. If allocated to nonwilderness, this largely nontimbered area will be managed as illustrated on the alternative maps.

Management Strategy 14 (Starkey Experimental Forest and Range)

This strategy is applied to the 27,100-acre Starkey Experimental Forest and Range and is common to all alternatives.

The area is allocated to research use and will be managed to protect existing research projects and provide for future research needs. In addition to its research contribution the experimental forest is expected to provide a variety of other benefits including timber and livestock forage when compatible with research uses.

Management Strategy 15

This strategy applies to old-growth forest. Although there is no wildlife species known to rely solely on old-growth habitat, there are 20 animal species on the Wallowa-Whitman which indicate definite preference for mature or old-growth forest. Examples of these are the goshawk, barred owl, pileated woodpecker, and Townsend's warbler. Old-growth forest habitat represents the best habitat for these species. It is not known whether other habitats are sufficient to maintain viable populations of these species without an available reservoir of old-growth. These areas include timber stands at widely ranging elevations and aspects, and in a variety of plant communities. It is intended that these stands will continue to provide the quality habitat needed by those wildlife species dependent upon mature and old-growth timber.

Management Strategy 16 (Administrative and Recreation Sites)

This management strategy applies to all administrative sites such as work centers, fire lookouts, campgrounds and other areas which are occupied by facilities for administration, public recreation or features of cultural significance. Included are three summer home tracts and two ski areas.

Management Strategy 17 (Power Transportation Facilities)

This strategy includes areas which are currently in use or are proposed for the transport of gas, oil, or electricity.

Management Strategy 18

This strategy is intended to provide optimum habitat for anadromous fish and high quality habitat for big game. It also provides good habitat for resident trout. Within this strategy, stream shade and stream channel conditions are managed to provide anadromous fish habitat at 90 percent of the smolt habitat capability index.

The dispersion of hiding cover, thermal cover, and forage is managed to provide near-optimum conditions.

COMPARISON OF ALTERNATIVES CONSIDERED IN DETAIL

The following tables present the resource outputs, the environmental effects, the activities, and the costs of all the alternatives and some selected benchmarks. Direct, indirect, and cumulative outputs and effects are presented.

By comparing the alternatives' response to issues and concerns (Table II-1) and to outputs and effects (Table II-3a and II-3b), the tie between issues and environmental effects will be seen.

Many of the outputs and effects are derived from the analysis which is described in Appendix B. All the other environmental effects are fully discussed in Chapter IV. Consult Appendix B and Chapter IV for additional information.

Refer to the Glossary for definitions and explanations of abbreviations and units of measure.

Table II-1
COMPARISON OF ISSUE AND CONCERN RESPONSE BY ALTERNATIVE

Issues and Concerns	Outputs or Effects To Be Measured	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
1. Timber Production	Maintain or increase sawtimber production/projected annual timber production in the first decade	Produces sawtimber at 88% of recent historical level.	Maintains recent historical sawtimber production.	Produces sawtimber at 112% of recent historical level.	Produces sawtimber at 90% of recent historical level.	Produces sawtimber at 111% of recent historical level in the first decade.
2. Transportation System Management	Minimize new road construction/miles of road existing in 2020	All alternatives access previously unharvested stands and thus rely on new road construction. The amount of difference among the alternatives ranges from increases of 15-20% as shown in Table II-3a. The significance of individual roads is portrayed under Management of Undeveloped Areas below.				
	Miles of road open to public use	Reduces mileage open for public use by about 10% for all alternatives except F which has open road mileage reduced by about 25%.				
3. Management of Undeveloped Areas	Retain existing undeveloped area/acres of undeveloped area remaining after two decades (excludes wilderness)	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 53% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 74% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 74% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 57% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 57% of roadless areas outside the . NRA.
4. Local Economy	Maintain economic stability of local communities in the first decade	Slight reductions in both jobs and personal income though with substantial increases in payments to local governments.	Slight increases in jobs and personal income with very large increases in payments to local governments.	Moderate increases in jobs and personal income with substantial increases in payments to local governments.	Essentially no change in the total number of jobs. Slight reductions in personal income and substantial increases in payments to local governments.	Moderate increases in jobs and personal income in the first decade. Very large increase in payments to local governments in the first decade.
5. Livestock Production	Maintain or increase forage available to domestic livestock: animal unit months.	No change in livestock grazing.	Moderate increases in livestock grazing.	Substantial increases in livestock grazing.	Moderate increases in livestock grazing.	Slight increases in livestock grazing.

Table II-1 (continued)
COMPARISON OF ISSUE AND CONCERN RESPONSE BY ALTERNATIVE

Issues and Concerns	Outputs or Effects To Be Measured	D	E	F	G	H
1. Timber Production	Maintain or increase timber production/ projected annual timber production in the first decade	Produces sawtimber at 96% of recent historical level.	Produces sawtimber at 91% of recent historical level.	Produces sawtimber at 63% of recent historical level.	Produces sawtimber at 80% of recent historical level.	Produces sawtimber at 77% of recent historical level.
2. Transportation System Management	Minimize new road construction/miles of road existing in 2020	All alternatives accessed previously unharvested stands and thus rely on new road construction. The amount of difference among the alternatives ranges from increases of 15-20% as shown in Table II-3a. The significance of individual roads is portrayed under Management of Undeveloped Areas shown below.				
	Miles of road open to public use	Reduces mileage open for public use by about 10% for all alternatives except F which has open road mileage reduced by about 25%.				
3. Management of Undeveloped Areas	Retain existing undeveloped area/ acres of undeveloped area remaining after two decades (excludes wilderness)	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 58% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. All other roadless areas remain roadless.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 39% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation Area as identified in the Comprehensive Management Plan. Permits access of 68% of roadless areas outside the NRA.	Retains Homestead Further Planning area and all roadless areas within the Hells Canyon National Recreation area as identified in the Comprehensive Management Plan. Permits access of 57% of roadless areas outside the NRA.
4. Local Economy	Maintain economic stability of local communities in the first decade	Essentially no change in jobs or personal income. Very large increases in payments to local governments.	Essentially no change in the total number of jobs. Slight reduction in personal income. Substantial increases in payments to local governments.	Substantial reductions in jobs and personal income. Moderate reductions in payments to local governments.	Moderate reductions in jobs and personal income. Substantial increases in payments to local governments.	Moderate reductions in jobs and personal income. Moderate increases in payments to to local governments.
5. Livestock Production	Maintain or increase forage available to domestic livestock: animal unit months.	Moderate increase in livestock grazing.	Slight decrease in livestock grazing.	Moderate decrease in livestock grazing.	No change in livestock nmbers.	Moderate increase in livestock grazing.

Table II-1 (continued)
COMPARISON OF ISSUE AND CONCERN RESPONSE BY ALTERNATIVE

Issues and Concerns	Outputs or Effects To Be Measured	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
6. Old-Growth Timber	Maintain existing old-growth timber meeting Regional old-growth definition (long-term)	Moderate reduction in total remaining old-growth. Poor distribution in some areas.	Substantial reduction in total remaining old-growth. Adequate distribution across the Forest.	Substantial reduction in total remaining old-growth. Adequate distribution across the Forest.	Moderate reduction in total remaining old-growth. Good distribution across the Forest.	Moderate reduction in total remaining old-growth. Good distribution across the Forest.
7. Minerals	Maximize opportunities for mineral exploration and extraction/acres of known mineral potential available for mineral entry with normal coordination requirements.	No change in available acres.	Moderate increase in available acres.	Moderate increase, in available acres.	Slight increase in available acres.	Slight increase in available acres.
8. Wildlife Production, Deer and Elk	Potential number of animals.	Would vary from a very small increase in decade 1 of about 2% to a decrease in decade 3 of about 4%. Thereafter approximating recent levels more closely.	Essentially no change in the first decade to a third decade decrease of 10%. Fifth decade levels are 7% lower than today.	Big-game production follows a 3 decade downward trend with this alternative to a low point about 10% below recent levels.	1% increase in decade 1 to a 7% decrease in decade 3, with output levels otherwise approximating 95% of recent levels.	Trends downward to a maximum decrease of 7% in decade 3 with subsequent resurgence to a level 95% that of recent times.
9. Recreation Diversity	Change in the recreation opportunity spectrum. (Wilderness)	--------------- No alternative changes wilderness classifications significantly ---------------				
	(Nonwilderness)	Development of areas which are currently roadless results in a 39% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 52% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 52% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 42% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 42% reduction in semiprimitive recreation opportunities.

Table II-1 (continued)
COMPARISON OF ISSUE AND CONCERN RESPONSE BY ALTERNATIVE

	Issues and Concerns	Outputs or Effects To Be Measured	D	E	F	G	H
6.	Old-Growth Timber	Maintain existing old-growth timber/levels meeting Regional old-growth definition (long-term)	Moderate reduction in total remaining old-growth. Good distribution across the Forest.	Slight reduction in total remaining old-growth. Adequate distribution across the Forest.	Essentially no change in total remaining old-growth. Good distribution across the Forest.	Slight decrease in total remaining old-growth. Adequate distribution across the Forest.	Moderate decrease in total remaining old-growth. Good distribution across the Forest.
7.	Minerals	Maximize opportunities for mineral exploration and extraction/acres of known mineral potential available for mineral entry with normal coordination requirements.	Slight increase in available acres.	Slight decrease in available acres.	No change in available acres.	Moderate increase in available acres.	Slight increase in available acres.
8.	Wildlife Production, Deer and Elk	Potential numbers of animals.	A 1% decade 1 increase would be followed by downward movement to a decrease of 9% in decade 3 with subsequent increase to a 6% reduction in decade 5.	A 1% decade 1 increase would be followed by downward movement to a decrease of 8% in decade 3 with subsequent increase to a 6% reduction in decade 5.	Increase in decade 1 gradually tapering over 50 years down to recent levels.	A 1% decade 1 increase would be followed by downward movement to a decrease of 10% in decade 3 with subsequent increase to a 7% reduction in decade 5.	A 1% decade 1 increase would be followed by downward movement to a decrease of 7% in decade 3 with subsequent increase to 5% reduction in decade 5.
9.	Recreation Diversity	Change in Recreation opportunity spectrum. (Wilderness)	--------------- No alternative changes the wilderness classifications significantly --------------				
		(Nonwilderness)	Development of areas which are currently roadless results in a 42% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 25% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 29% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 49% reduction in semiprimitive recreation opportunities.	Development of areas which are currently roadless results in a 42% reduction in semiprimitive recreation opportunities.

TABLE II-2

MANAGEMENT AREA ACREAGES BY ALTERNATIVE

Management Strategy		A (Current Direction) 1/	B (RPA), B-dep	C, C-dep, H	D	E	F	G
1		426,130	888,165	656,355	834,336	762,930	0	873,267
2		0	357,726	0	0	316,014	0	357,726
3		712,388	0	464,937	349,639	0	442,831	0
4	Wilderness	582,700	582,700	582,700	582,700	583,713	583,713	582,700
5	Phillips Lake Area*	4,967	4,967	4,967	4,967	4,967	4,967	4,967
6		124,805	62,543	110,924	108,464	225,116	152,712	77,441
7	Wild and Scenic River	0	0	6,283	6,283	8,203	19,135	0
8	HCNRA Snake River Corridor*	14,355	14,355	14,355	14,355	14,355	14,355	14,355
9	HCNRA Disp. Rec./Nat. Veg.*	161,078	161,078	161,078	161,078	161,078	161,078	161,078
10	HCNRA Forage*	128,009	128,009	128,009	128,009	128,009	128,009	128,009
11	HCNRA Disp. Rec./Tmbr. Mgt.*	75,366	75,366	74,866	74,866	74,866	74,866	74,366
12	Research Natural Areas	974	12,960 (11,960) 2/	14,560 (13,360)	14,560 (13,360)	14,560 (13,360)	14,560 (13,360)	12,960 (11,960)
13	Homestead Further Planning Area 3/ *	5,733	5,733	5,733	5,733	5,733	5,733	5,733
14	Starkey Exp. For. & Range*	27,051	27,051	27,051	27,051	27,051	27,051	27,051
15	Old-Growth 4/	76,919	28,184	38,196	38,196	23,642	40,312	28,184
16	Administrative and Recreation Sites	0	5,744	5,744	5,744	5,744	5,744	5,744
17	Utility Corridors	0	6,594	6,594	6,594	6,594	6,594	6,594
18		0	0	60,223	0	0	680,915	0
	Baker City Watershed	8,740	0	0	0	0	0	0
	Total	2,349,215						

* Denotes management areas which, because of Congressional or administrative designation, do not vary among alternatives except as needed to provide research natural areas or additions to the national Wild and Scenic Rivers System.

1/ Alternative A is the current direction alternative. Since this alternative is made up of numerous allocations from six unit plans, the summary and comparison of acres allocated are necessarily approximate.

2/ If the Homestead Further Planning Area does not become wilderness 3,708 acres would become part of Management Area 10 with the remaining acres being within Management Areas 1, 2, or 3, depending on the alternative.

3/ ( ) acres within wilderness, Snake River Corridor, Dispersed Recreation/Native Vegetation, or further planning allocation.

4/ Old growth in Alternative A is managed with about 28000 acres currently in an old growth condition. All other alternatives show dedicated old growth, nearly all representing old growth condition.

Table II-3a
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- TIMBER -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Lands Tentatively Suitable for Timber Production	M Acres	NA	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1
Lands Suitable for Timber Production*	M Acres	NA	822.8	822.8	845.8	845.8	950.0	1,072.1	822.8	788.2	862.2
Full Yield		NA	125.6	125.6	73.8	173.8	950.0	1,072.7	125.6	105.9	178.9
50-90% of Full Yield		NA	273.7	273.7	364.5	364.5	0	0	273.7	431.0	454.7
1-49% of Full Yield		NA	423.5	423.5	507.5	507.5	0	0	423.5	257.6	228.6
Timber Harvest Prescriptions											
Clearcut	M Acres	0	304.3	304.3	338.2	338.2	406.5	442.5	304.3	334.7	332.1
Shelterwood	M Acres	0	469.8	469.8	458.9	458.9	466.0	630.2	469.8	351.8	402.4
Selection	M Acres	0	48.7	48.7	48.7	48.7	77.5	0	48.7	101.7	127.7
Allowable Sale Quantity											
Sawlog Volume (Recent levels: 28.6)	Million CF/Year										
1986		0	27.1	27.1	27.2	27.2	39.1	47.9	27.1	21.5	28.2
2000		0	27.1	27.1	34.0	34.0	39.1	47.9	27.1	21.5	28.2
2030		0	27.1	27.1	26.3	26.3	39.1	47.9	27.1	21.5	28.2
Sawlog Volume (Recent levels: 159)	Million BF/Year										
1986		0	136	136	151	151	193	239	136	100	139
2000		0	152	152	173	173	192	216	152	109	142
2030		0	135	135	147	147	185	252	135	115	139
Long-Run Sustained Yield	Million CF/Year	0	28.6	28.6	26.8	26.8	47.1	57.3	28.6	25.5	31.8
Timber Growth In 2030	Million CF/Year	NE	24.3	24.3	15.2	15.2	75.6	72.6	24.3	18.0	30.1

* Suitable for timber production given the multiple use objectives of the alternative (36 CFR 219.14 (d).).

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- TIMBER, FIRE -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Unregulated Timber 1/ Roundwood Volume Only (Recent Levels: 9.6)	Million CF/Year										
1986		0	7.5	7.5	7.5	7.5	10.9	13.4	7.5	5.9	7.8
2000		0	6.3	6.3	7.9	7.9	9.1	11.2	6.3	5.0	6.5
2030		0	5.0	5.0	4.8	4.8	7.2	8.8	5.0	3.9	5.2
Personal-Use Fuelwood	Million CF/Year	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Fuel Treatment	M Acres/Year										
1986		0	NE	NE	NE	NE	NE	NE	NE	15.5	20.5
2000		0	NE	NE	NE	NE	NE	NE	NE	18.9	21.1
2030		0	NE	NE	NE	NE	NE	NE	NE	20.1	29.1
Reforestation 2/ (Recent levels: 3.3)	M Acres/Year										
1986		0	3.7	3.7	4.0	4.0	11.4	18.3	3.7	4.3	4.9
2000		0	3.2	3.2	3.5	3.5	4.8	3.2	3.2	4.3	5.2
2030		0	0.7	0.7	0.2	0.2	2.5	13.3	0.7	4.5	2.0
Timber Stand Improvement (Recent Levels: 3.9)	M Acres/Year										
1986		0	6.2	6.2	5.5	5.5	12.7	12.8	6.0	1.4	7.3
2000		0	5.9	5.9	6.2	6.2	22.8	32.0	5.9	1.6	11.1
2030		0	8.7	8.7	4.2	4.2	14.0	17.6	8.7	1.5	3.6
Reforestation Backlog	M Acres	0	0	0	0	0	0	0	0	0	0
Fire Management Effectiveness Index	$/M protected Acres/Year										
1986		646	931	931	932	932	1,106	1,232	931	851	946
2000		646	917	917	1,011	1,011	1,086	1,208	917	840	932
2030		646	903	903	892	892	1,065	1,182	903	829	917

1/ Salvage of cull, dead lodgepole pine, and small diameter (less than 5 inches) material.
2/ Includes all acres where activities aiding the reestablishment of tree cover are employed. Includes planting and other reforestation measures.

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- RECREATION -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Developed Recreation Use	M RVD's/Year										
(Recent Levels: 367)											
1986		0	399	399	399	399	399	399	399	399	399
2000		0	464	464	464	464	464	464	464	464	464
2030		0	635	635	635	635	635	635	635	635	635
Nonwilderness Dispersed Recreation Use 1/											
Roaded 2/	M RVD's/Year										
(Recent levels: 343)											
1986		NE	373	373	373	373	373	373	373	373	373
2000		NE	434	434	434	434	434	434	434	434	434
2030		NE	746	746	746	746	746	746	746	680	710
Unroaded 3/	M RVD's/Year										
(Recent Levels: 389)											
1986		NE	423	423	423	423	423	423	423	423	423
2000		NE	492	492	492	492	492	492	492	492	492
2030		NE	469	469	469	469	469	469	469	583	545
Wilderness Use 1/	M RVD's/Year										
(Recent Levels: 72)											
1986		78	78	78	78	78	78	78	78	78	78
2000		91	91	91	91	91	91	91	91	91	91
2030		129	177	177	177	177	177	177	177	129	137
Wildlife and Fish Recreation Use	M WFUD's/Year 4/										
(Recent Levels: 340)											
1986		NE	368	368	368	368	368	368	368	368	368
2000		NE	402	402	402	402	402	402	402	453	428
2030		NE	546	546	546	546	546	546	546	605	575

1/ Figures are exclusive of wildlife and fish recreation user days (WFUD's).
2/ Includes roaded natural, roaded modified, rural, and urban recreation opportunity spectrum classes.
3/ Includes primitive, semiprimitive nonmotorized, and semiprimitive motorized recreation opportunity spectrum classes.
4/ Wildlife and fish user days (hunting and fishing).

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- RECREATION -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Trail Construction and Reconstruction (Recent Levels: 4)	Miles/Year										
1986		0	4	4	4	4	4	4	4	4	4
2000		0	5	5	5	5	5	5	5	5	5
2030		0	5	5	5	5	5	5	5	5	5
Developed Site Construction and Reconstruction (Recent Levels: 100)	PAOT/Year*										
1986		0	550	550	550	550	550	550	550	550	100
2000		0	50	50	50	50	50	50	50	50	100
2030		0	50	50	50	50	50	50	50	50	100
Visual Quality Objectives											
Preservation	M Acres	582.7	582.7	582.7	582.7	582.7	582.7	582.7	582.7	582.7	582.7
Retention	M Acres	1,766.5	0	0	0	0	0	0	0	257.6	257.6
Partial Retention	M Acres	0	0	0	0	0	0	0	0	397.4	397.4
Modification/Max.Mod.	M Acres	0	1,766.5	1,766.5	1,766.5	1,766.5	1,766.5	1,766.5	1,766.5	1,111.5	1,111.5
Unroaded Areas Assigned to Roaded Management Prescriptions, But Which Have No Development Activities for the Next 15 Years	M Acres	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Unroaded Areas Assigned to Unroaded Management Prescriptions	M Acres	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

*** Persons at one time;** capacity increased or improved per year.

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- WILDLIFE -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Old-growth in Long-term (Recent Levels: 173.0)	M Acres	NE	143.3	143.3	143.3	143.3	131.2	69.5	143.3	174.6	149.5
Management Indicator Species 1/											
Bald Eagle	Pairs										
1986		1	1	1	1	1	1	1	1	1	1
2000		8	8	8	8	8	8	0	8	8	8
2030		8	8	8	8	8	8	0	8	8	8
Peregrine Falcon	Pairs										
1986		0	0	0	0	0	0	0	0	0	0
2000		4	4	4	4	4	4	0	4	4	4
2030		4	4	4	4	4	4	0	4	4	4
Pileated Woodpecker	Pairs										
1986		346	346	346	346	346	346	346	346	346	346
2000		349	300	300	300	300	300	250	300	349	310
2030		349	287	287	287	287	287	230	287	349	299
3-Toed Woodpecker	Pairs 2/	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Pine Marten	Pairs 2/	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Anadromous Fish	M Spawning Adults 3/										
1986		38.2	38.2	38.2	38.2	38.2	38.6	38.6	38.6	38.6	38.2
2000		38.2	38.3	38.3	38.3	38.3	39.4	39.4	39.4	39.4	39.3
2030		38.2	38.4	38.4	38.4	38.4	41.8	41.8	41.8	41.8	39.4
Rocky Mountain Elk	M Elk Summering 4/										
1986		NE	21.0	21.0	NE	NE	21.0	NE	21.0	21.0	21.0
2000		NE	19.3	19.3	NE	NE	19.3	NE	19.3	22.4	20.8
2030		NE	19.0	19.0	NE	NE	19.0	NE	19.0	21.7	20.4

1/ Numbers of management indicator species are index values only based upon acres of available habitat as described in Chapter 4.
2/ Population trend not estimated, but expected to parallel pileated woodpecker.
3/ Numbers of spawning fish assuming full escapement. Of the numbers shown, 38,203 are due to achievement of full escapement--work done by other agencies.
4/ Index number of elk summering on the Forest.

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- WILDLIFE, WATERSHED, RANGE -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Wildlife Habitat Improv.	Acres										
1986		0	500	500	500	500	2,000	2,000	2,000	2,000	500
2000		0	500	500	500	500	2,000	2,000	2,000	2,000	500
2030		0	500	500	500	500	500	500	500	500	500
Wildlife Habitat Improv.	Acre Equivalents										
1986		0	2,500	2,500	2,500	2,500	10,000	10,000	10,000	10,000	2,500
2000		0	2,500	2,500	2,500	2,500	10,000	10,000	10,000	10,000	2,500
2030		0	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Water Yield	Million Acre Feet										
1986		2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
2000		2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
2030		2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
Sediment	% of natural										
1986		NE	NE	NE	NE	NE	NE	NE	NE	117	119
2000		NE	NE	NE	NE	NE	NE	NE	NE	117	119
2030		NE	NE	NE	NE	NE	NE	NE	NE	117	120
Watershed Improvement Work (Recent Levels: 5)	Acres/Year										
1986		0	500	500	500	500	500	500	500	500	5
2000		0	500	500	500	500	500	500	500	500	5
2030		0	500	500	500	500	500	500	500	500	5
Range--Permitted Grazing (Recent Levels: 186)	M AUM's/Year										
1986		0	207	207	207	207	207	207	227	159	186
2000		0	207	207	207	207	207	207	227	159	186
2030		0	207	207	207	207	207	207	227	159	186

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- ROADS -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Arterial and Collector Road Construction and Reconstruction	Miles/Year										
1986		0	NE	NE	NE	NE	NE	NE	NE	54	69
2000		0	NE	NE	NE	NE	NE	NE	NE	47	74
2030		0	NE	NE	NE	NE	NE	NE	NE	54	76
Timber Purchaser Road Construction and Reconstruction (Recent levels: 180)	Miles/Year										
1986		0	NE	NE	NE	NE	NE	NE	NE	131	178
2000		0	NE	NE	NE	NE	NE	NE	NE	94	136
2030		0	NE	NE	NE	NE	NE	NE	NE	90	131
Roads Suitable for Public (Passenger car)*	Miles										
1986		NE	NE	NE	NE	NE	NE	NE	NE	835	835
2000		NE	NE	NE	NE	NE	NE	NE	NE	835	865
2030		NE	NE	NE	NE	NE	NE	NE	NE	835	865
Roads Suitable for Public (High Clearance Vehicle)	Miles										
1986		NE	NE	NE	NE	NE	NE	NE	NE	3,255	3,255
2000		NE	NE	NE	NE	NE	NE	NE	NE	1,265	3,280
2030		NE	NE	NE	NE	NE	NE	NE	NE	1,265	3,280
Roads Requiring User Maintenance (High Clearance Vehicle)	Miles										
1986		NE	NE	NE	NE	NE	NE	NE	NE	1,505	1,505
2000		NE	NE	NE	NE	NE	NE	NE	NE	1,043	2,588
2030		NE	NE	NE	NE	NE	NE	NE	NE	1,114	2,786

* The need for additional roads of this type is not currently anticipated.

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- MINERALS, LOCAL ECONOMY -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Energy Minerals Produced	Billion BTU/Year										
1986		NE	NE	NE	NE	NE	NE	NE	NE	0	0
2000		NE	NE	NE	NE	NE	NE	NE	NE	0	0
2030		NE	NE	NE	NE	NE	NE	NE	NE	0	0
Non-Energy Minerals Produced	Million $/Year										
1986		NE	NE	NE	NE	NE	NE	NE	NE	13.6	13.4
2000		NE	NE	NE	NE	NE	NE	NE	NE	54.2	53.3
2030		NE	NE	NE	NE	NE	NE	NE	NE	124.5	121.6
Mineral Operating Plans	Number Active/Year										
1986		NE	379	379	379	379	379	379	379	354	352
2000		NE	425	425	425	425	425	425	425	397	394
2030		NE	499	499	499	499	499	499	499	466	463
Human Resource Program	Person Years/Year										
1986		0	4	4	4	4	4	4	4	4	4
2000		0	4	4	4	4	4	4	4	4	4
2030		0	4	4	4	4	4	4	4	4	4
Changes in Forest-Related Jobs (Recent Levels: 3633)	Number										
1986		-2,997	-138	-138	-10	-91	+607	+1,154	-138	-533	-107
Changes in Forest-Related Personal Income (Recent Levels: 60.0)	Million $/Year										
1986		-51.4	-4.0	-4.0	+1.3	+0.7	+11.1	+22.1	-4.0	-11.9	-3.3
Payments to Counties (Recent Levels: 3.7)	Million $/Year										
1986		0	4.8	4.8	4.9	4.9	4.6	9.1	4.8	3.2	4.4
2000		0	5.0	5.0	5.9	5.9	5.2	4.7	5.1	3.5	4.4
2030		0	5.4	5.4	5.7	5.7	4.0	10.4	5.4	4.9	2.9

NA - Not Applicable
NE - Not Estimated

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY BENCHMARK
- COSTS, RETURNS -

Outputs/Effects	Unit of Measure	Minimum Level	Max PNV Run 11	Max PNV Run 7	Max PNV Run 4	Max PNV Run 8	Max Tmbr w/ MMR's	Max Tmbr w/o MMR	Max Livestck	Max Elk	Current Direction
Operational Costs	Million $/Year										
1986		4.2	10.3	10.3	10.3	10.3	12.6	14.3	10.3	9.2	10.5
2000		4.2	10.2	10.2	11.5	11.5	12.5	14.1	10.2	9.2	10.4
2030		4.2	10.3	10.3	10.1	10.1	12.4	13.9	10.3	9.3	10.4
Capital Investment Costs	Million $/Year										
1986		0	9.2	9.2	9.5	9.5	22.9	18.2	9.2	8.9	10.7
2000		0	8.0	8.0	8.9	8.9	12.8	15.4	8.0	7.8	10.4
2030		0	6.5	5.9	5.7	5.7	9.9	15.5	6.6	6.8	8.1
Total National Forest Funds											
Allocated	Million $/Year										
1986		0	4.9	4.9	5.2	5.2	17.7	12.3	4.9	4.8	7.0
2000		0	4.9	4.9	5.5	5.5	8.9	10.9	4.9	4.9	6.8
2030		0	3.5	3.5	2.7	2.7	6.0	11.1	3.5	4.0	4.4
Appropriated	Million $/Year										
1986		4.3	14.6	14.6	14.6	14.6	17.9	20.2	14.7	13.3	14.2
2000		4.3	13.3	13.3	15.0	15.0	16.5	18.6	13.4	12.1	14.0
2030		4.3	13.3	13.3	13.1	13.2	16.3	18.2	13.4	12.1	14.0
Returns to Government*	Million $/Year										
1986		0.1	17.7	17.7	18.4	18.4	13.3	30.2	17.7	11.1	15.3
2000		0.1	18.8	18.8	21.9	21.9	19.0	17.7	18.8	12.5	15.5
2030		0.1	21.2	21.2	22.5	22.5	14.7	36.9	21.2	17.8	10.3

* Gross Federal receipts including Purchaser Credit Roads.

NA - Not Applicable
NE - Not Estimated

Table II-3a
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- TIMBER -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Lands Tentatively Suitable for Timber Production	M Acres	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1	1,090.1
Lands Suitable for Timber Production*	M Acres	862.2	875.0	937.3	831.7	842.8	843.7	801.7	788.2	800.6	784.1
Full Yield		178.9	157.2	308.8	151.2	164.2	192.6	191.7	99.6	122.4	131.4
50-90% of Full Yield		454.7	536.3	528.0	474.1	441.2	496.6	465.5	431.0	255.2	399.0
1-49% of Full Yield		228.6	181.5	100.5	206.4	237.4	154.5	144.5	257.6	423.0	253.7
Timber Harvest Prescriptions											
Clearcut	M Acres	332.1	360.0	393.1	330.9	327.1	330.9	321.8	334.7	301.5	284.5
Shelterwood	M Acres	402.4	436.7	444.9	403.5	401.2	403.5	395.9	351.8	433.7	401.6
Selection	M Acres	127.7	78.3	99.3	109.3	114.5	109.3	84.0	101.7	65.4	98.0
Allowable Sale Quantity											
Sawlog Volume (Recent levels: 28.6)	Million CF/Year										
1986		28.2	31.9	36.0	28.3	36.5	30.2	29.1	21.5	25.5	25.2
2000		28.2	31.9	37.2	28.3	26.6	30.2	29.1	21.5	25.5	25.2
2030		28.2	31.9	41.0	28.3	26.6	30.2	29.1	21.5	25.5	25.2
Sawlog Volume (Recent levels: 159)	Million BF/Year										
1986		139	158	179	143	177	149	145	100	127	123
2000		142	160	201	137	131	157	147	109	140	126
2030		139	162	181	137	132	159	131	115	130	132
Long-Run Sustained Yield	Million CF/Year	31.8	35.5	37.6	31.7	31.2	33.8	33.2	25.5	27.0	27.7
Timber Growth In 2030	Million CF/Year	30.1	32.0	26.4	29.6	29.0	32.5	31.6	18.0	22.5	23.8
Unregulated Timber 2/ Roundwood Volume Only (Recent Levels: 9.6)	Million CF/Year										
1986		7.8	8.8	9.9	7.8	10.1	8.3	8.0	5.9	7.0	6.9
2000		6.5	7.4	8.6	6.5	6.2	7.0	6.7	5.0	5.9	5.8
2030		5.2	5.8	7.5	5.2	4.9	5.5	5.3	3.9	4.7	4.6

1/ Suitable for timber production given the multiple use objectives of the alternative (36 CFR 219.14 (d)).
2/ Salvage of cull, dead lodgepole pine, and small diameter (less than 5 inches) material.

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- TIMBER, FIRE, RECREATION -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Personal-Use Fuelwood	Million CF/Year	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Fuel Treatment	M Acres/Year										
1986		20.5	19.9	25.3	19.8	27.7	20.3	18.8	15.5	15.1	15.5
2000		21.1	21.8	27.5	20.8	19.7	23.0	21.6	18.9	19.5	20.3
2030		29.1	27.3	35.8	25.3	26.1	27.0	24.7	21.1	21.6	23.8
Reforestation 1/ (Recent levels: 3.3)	M Acres/Year										
1986		4.9	4.0	8.4	4.6	5.8	4.4	4.2	4.3	3.1	3.2
2000		5.2	3.7	8.5	4.1	4.3	4.3	3.6	4.3	2.8	3.1
2030		2.0	2.0	2.3	2.0	2.0	1.3	1.7	4.5	1.7	2.4
Timber Stand Improvement (Recent Levels: 3.9)	M Acres/Year										
1986		7.3	7.8	10.2	6.8	6.6	7.5	8.1	1.4	4.9	5.4
2000		11.1	3.2	14.2	8.8	9.8	12.3	12.8	1.6	4.9	6.5
2030		3.6	8.5	10.0	4.4	2.3	7.1	8.1	1.5	4.4	3.1
Fire Management Effectiveness Index	$/M protected Acres/Year										
1986		946	999	1,057	947	1,063	975	959	851	908	903
2000		932	983	1,055	933	911	959	944	840	896	890
2030		917	966	1,085	918	896	943	929	829	882	887
Developed Recreation Use (Recent Levels: 367)	M RVD's/Year										
1986		399	399	399	399	399	399	399	399	399	399
2000		464	464	464	464	464	464	464	464	464	464
2030		635	635	635	635	635	635	635	635	635	635
Nonwilderness Dispersed Recreation Use 2/											
Roaded 3/ (Recent levels: 343)	M RVD's/Year										
1986		373	373	373	373	373	373	373	373	373	373
2000		434	434	434	434	434	434	434	434	434	434
2030		710	746	746	705	705	705	667	680	724	705

1/ Includes all acres where activities aiding the reestablishment of tree cover are employed. Includes planting and other reforestation measures.
2/ Figures are exclusive of wildlife and fish recreation user days (WFUD's).
3/ Includes roaded natural, roaded modified, rural, and urban recreation opportunity spectrum classes.

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- RECREATION -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Unroaded 1/ (Recent Levels: 389)	M RVD's/Year										
1986		423	423	423	423	423	423	423	423	423	423
2000		492	492	492	492	492	492	492	492	492	492
2030		545	469	469	535	535	535	596	583	469	535
Wilderness Use 2/ (Recent Levels: 72)	M RVD's/Year										
1986		78	78	78	78	78	78	78	78	78	78
2000		91	91	91	91	91	91	91	91	91	91
2030		137	177	177	152	152	152	129	129	177	152
Wildlife and Fish Recreation Use (Recent Levels: 340)	M WFUD's/Year 3/										
1986		368	368	368	368	368	368	368	368	368	368
2000		428	412	412	420	420	415	416	440	413	420
2030		575	555	543	567	567	561	558	589	555	567
Trail Construction and Reconstruction (Recent Levels: 4)	Miles/Year										
1986		4	4	4	4	4	4	4	4	4	4
2000		5	5	5	5	5	5	5	5	5	5
2030		5	5	5	5	5	5	5	5	5	5
Developed Site Construction and Reconstruction (Recent Levels: 100)	PAOT/Year*										
1986		100	550	550	550	550	550	550	550	550	550
2000		100	50	50	50	50	50	50	50	50	50
2030		100	50	50	50	50	50	50	50	50	50

1/ Includes primitive, semiprimitive nonmotorized, and semiprimitive motorized recreation opportunity spectrum classes.
2/ Figures are exclusive of wildlife and fish recreation user days (WFUD's).
3/ Wildlife and fish user days (hunting and fishing).
4/ Persons at one time; capacity increased or improved per year.

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- RECREATION, WILDLIFE -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Visual Quality Objectives											
Preservation	M Acres	582.7	582.7	582.7	582.7	582.7	582.7	583.7	583.7	582.7	582.7
Retention	M Acres	257.6	185.2	185.2	257.6	257.6	257.6	185.2	257.6	185.2	257.6
Partial Retention	M Acres	397.4	271.9	271.9	397.4	397.4	397.4	271.9	397.4	271.9	397.4
Modification/Max.Mod.	M Acres	1,111.5	1,309.4	1,309.4	1,111.5	1,111.5	1,111.5	1,308.4	1,110.5	1,309.4	1,111.5
Unroaded Areas Assigned to Roaded Management Prescriptions, but Which Have No Development Activities for the Next 15 Years	M Acres	18.3	38.6	18.3	24.8	24.8	24.8	0.0	23.2	38.6	24.8
Unroaded Areas Assigned to Unroaded Management Prescriptions	M Acres	342.5	293.2	293.2	334.0	334.0	330.5	467.7	376.8	308.0	334.0
Old-growth in Long-term (Recent Levels: 173.0)	M Acres	149.5	143.3	132.8	161.5	157.7	158.3	166.8	174.6	150.6	161.9
Management Indicator Species 1/											
Bald Eagle	Pairs										
1986		1	1	1	1	1	1	1	1	1	1
2000		8	8	8	8	8	8	8	8	8	8
2030		8	8	8	8	8	8	8	8	8	8
Peregrine Falcon	Pairs										
1986		0	0	0	0	0	0	0	0	0	0
2000		4	4	4	4	4	4	4	4	4	4
2030		4	4	4	4	4	4	4	4	4	4
Pileated Woodpecker	Pairs										
1986		346	346	346	346	346	346	346	346	346	346
2000		310	380	295	330	322	323	337	349	313	330
3-Toed Woodpecker	Pairs 2/	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Pine Marten	Pairs 2/	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2030		299	287	266	323	315	317	334	349	301	324

1/ Numbers of management indicator species are index values only based upon acres of available habitat as described in Chapter IV.

2/ Population trend not estimated, but expected to parallel pileated woodpecker.

TABLE II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- WILDLIFE, WATERSHED -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Anadromous Fish	M Spawning Adults 1/										
1986		38.2	38.6	38.6	38.6	38.6	38.3	38.6	38.6	38.3	38.6
2000		38.3	39.4	39.4	39.4	39.4	38.6	39.3	39.4	38.4	39.4
2030		38.4	41.8	41.8	41.8	41.8	41.2	41.4	41.8	38.7	41.8
Rocky Mountain Elk	M Elk Summering 2/										
1986		21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
2000		20.8	19.9	19.9	20.4	20.4	20.5	20.1	21.6	19.9	20.4
2030		20.8	19.5	19.0	20.0	20.0	19.7	19.6	21.0	19.5	20.0
Wildlife Habitat Improv.	Acres										
1986		500	2,000	2,000	1,000	1,000	1,000	2,000	2,000	500	1,000
2000		500	2,000	2,000	1,000	1,000	1,000	2,000	2,000	500	1,000
2030		500	500	500	1,000	1,000	1,000	500	500	500	1,000
Wildlife Habitat Improv.	Acre Equivalents										
1986		2,500	10,000	10,000	5,000	5,000	5,000	10,000	10,000	2,500	5,000
2000		2,500	10,000	10,000	5,000	5,000	5,000	10,000	10,000	2,500	5,000
2030		2,500	2,500	2,500	5,000	5,000	5,000	2,500	2,500	2,500	5,000
Water Yield	Million Acre Feet										
1986		2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
2000		2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
2030		2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
Sediment	% of natural										
1986		119	121	123	119	120	119	118	117	119	119
2000		119	121	123	119	119	120	118	117	119	119
2030		120	122	124	120	120	120	119	117	120	119
Watershed Improvement Work (Recent Levels: 5)	Acres/Year										
1986		5	1,000	1,500	1,000	1,000	1,000	500	500	500	1,000
2000		5	1,000	1,500	1,000	1,000	1,000	500	500	500	1,000
2030		5	1,000	0	1,000	1,000	1,000	500	500	500	1,000

1/ Numbers of spawning fish assuming full escapement of the numbers shown, 38,203 are due to achievement of full escapement--work done by other agencies.

2/ Index number of elk summering on the Forest.

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- RANGE, TRANSPORTATION -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Range--Permitted Grazing (Recent Levels: 186)	M AUM's/Year										
1986		186	207	227	207	207	212	181	159	186	177
2000		186	210	227	207	207	212	181	159	186	177
2030		186	227	227	207	207	212	181	159	186	177
Arterial and Collector Road Construction and Reconstruction*	Miles/Year										
1986		69	77	86	69	88	76	84	54	60	58
2000		64	75	93	59	79	70	87	47	60	54
2030		76	88	111	76	80	86	100	54	66	66
Timber Purchaser Road Construction and Reconstruction* (Recent levels: 180)	Miles/Year										
1986		178	195	232	183	218	187	194	131	153	152
2000		136	148	188	123	140	136	152	94	128	110
2030		131	140	193	128	116	137	128	90	105	107
Roads Suitable for Public (Passenger car)	Miles										
1986		835	835	835	835	835	835	835	835	835	835
2000		865	867	867	865	865	865	845	859	866	865
2030		865	867	867	865	865	865	845	859	866	865
Roads Suitable for Public (High Clearance Vehicle)	Miles										
1986		3,255	3,255	3,255	3,255	3,255	3,255	3,255	3,255	3,255	3,255
2000		3,280	3,195	3,195	3,195	3,195	3,195	3,180	2,530	3,195	3,195
2030		3,280	3,195	3,195	3,195	3,195	3,195	3,180	2,530	3,195	3,195
Roads Requiring User Maintenance (High Clearance Vehicle)	Miles										
1986		1,505	1,505	1,505	1,505	1,505	1,505	1,505	1,505	1,505	1,505
2000		2,588	2,947	2,961	2,565	2,818	2,869	2,713	2,085	2,651	2,568
2030		2,786	3,170	3,259	2,756	2,995	2,975	2,958	2,228	2,829	2,731

* Primarily reconstruction in later decades.

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE 1/
- MINERALS, LOCAL ECONOMY -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Energy Minerals Produced	Billion BTU/Year										
1986		0	0	0	0	0	0	0	0	0	0
2000		0	0	0	0	0	0	0	0	0	0
2030		0	2,100	2,100	0	0	0	0	0	2,100	0
Nonenergy Minerals Produced	Million $/Year										
1986		13.4	15.0	15.0	13.5	13.5	13.5	13.1	13.6	15.0	13.5
2000		53.3	60.0	60.0	54.2	54.2	54.2	52.6	54.2	60.0	54.2
2030		121.6	137.0	137.0	125.0	125.0	125.0	121.2	124.1	137.0	125.0
Mineral Operating Plans	Number Active/Year										
1986		352	379	379	354	354	354	340	354	379	354
2000		394	425	425	397	397	397	381	397	425	354
2030		463	499	499	466	466	466	448	466	499	466
Human Resource Program	Person Years/Year										
1986		4	4	4	4	4	4	4	4	4	4
2000		4	4	4	4	4	4	4	4	4	4
2030		4	4	4	4	4	4	4	4	4	4
Changes in Forest-Related Jobs (Recent Levels: 3633)	Number										
1986		-107	+124	+362	-53	+358	+24	-43	-569	-252	-294
Changes in Forest-Related Personal Income (Recent Levels: 60.0)	Million $/Year										
1986		-3.3	+1.3	+6.2	-2.3	+6.0	-0.8	-2.0	-12.5	-6.2	-7.0
Payments to Counties (Recent Levels: 3.7)	Million $/Year										
1986		4.4	5.0	4.6	4.5	5.3	4.7	4.6	3.2	4.2	3.9
2000		4.4	5.1	6.2	4.4	3.9	4.7	4.8	3.5	4.7	4.2
2030		2.9	5.6	2.3	4.2	4.1	4.2	4.3	4.9	5.3	5.0

Table II-3a (Continued)
QUANTIFIABLE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS BY ALTERNATIVE
- COSTS, RETURNS -

Outputs/Effects	Unit of Measure	A Current Direction	B RPA	B-dep FPFO	C Proposed Action	C-dep	D	E	F	G	H
Operational Costs	Million $/Year										
1986		10.5	11.2	12.1	10.5	12.1	10.9	10.7	9.2	9.9	9.9
2000		10.4	11.1	12.1	10.5	10.2	10.8	10.6	9.2	9.9	9.9
2030		10.4	11.2	12.7	10.5	10.2	10.8	10.6	9.2	9.9	9.9
Capital Investment Costs	Million $/Year										
1986		10.7	11.1	15.9	11.1	13.7	11.1	10.8	8.8	8.5	9.0
2000		10.4	9.6	12.8	8.8	8.6	9.7	9.3	7.7	8.1	8.4
2030		8.1	8.3	14.4	7.4	7.0	7.6	7.7	6.8	6.3	6.9
Total National Forest Funds											
Allocated	Million $/Year										
1986		7.0	6.3	10.6	6.6	8.6	6.5	6.2	4.8	4.3	4.7
2000		6.8	6.0	8.9	5.5	5.3	6.4	6.0	4.9	5.0	5.3
2030		4.4	4.6	10.3	4.0	3.8	4.3	4.4	4.0	3.2	3.8
Appropriated	Million $/Year										
1986		14.2	16.0	17.3	15.1	17.1	15.5	15.2	13.3	14.2	14.2
2000		14.0	14.8	16.1	13.8	13.4	14.2	13.9	12.0	13.0	13.0
2030		14.0	14.9	16.8	13.8	13.4	14.2	13.8	12.1	13.1	13.0
Returns to Government*	Million $/Year										
1986		15.3	18.4	15.0	16.0	18.9	16.8	16.7	11.1	15.7	14.5
2000		15.5	19.1	22.0	16.0	14.0	17.1	17.7	12.5	17.5	15.4
2030		10.3	21.6	7.9	15.9	15.5	16.1	16.2	17.8	20.5	18.9

* Gross Federal receipts including purchaser credit roads.

Table II-3b
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

Resource Outputs and Environmental Effects	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Air Quality	Will vary with acres of fuel treatment (see Table II-3a). However, differences will be slight and probably not noticeable. Off-Forest sources of smoke will have greater effects on air quality than will on-Forest activities, regardless of alternative, except in instances of large on-Forest wildfires.				
Landscape Character of Forest	Forest will appear natural or slightly modified for most important travel routes. HCNRA and wildernesses will retain largely unaltered appearances.	Visual character will appear significantly altered in most forested areas with exceptions of major travel routes, HCNRA, wildernesses, and areas above 6,000 ft. elevation. Elsewhere, management activities will often dominate.	Similar to Alternative B, but landscapes will be more rapidly brought to a managed appearance.	Forest will show somewhat more alteration by man than Alternative A but much less than Alternative B. Natural character will be retained, or partially retained along most important travel routes.	The effects will be similar to Alternative C but higher level of industrial activity will be apparent. Landscape alteration, where permitted, will come about more rapidly.
Changes in Recreational Use Patterns	Use pattern will change slightly as roadless areas are developed. Some hunting use will shift to wilderness. Overall use pattern will change little.	Use of wilderness and HCNRA will increase as remainder of Forest is developed.	Same as Alternative B. Shifts in use will occur more rapidly.	Similar to Alternative A. Fewer roadless areas than present will force some users to wilderness or the HCNRA.	Similar to Alternative C but projected shifts would occur more rapidly.
Accessibility for Exploration of Potential Mineralized Areas	No change.	Moderate increase in accessibility (about 8%).	Moderate increase in accessibility (about 8%).	Slight (3%) increase in accessibility.	Slight (3%) increase in accessibility.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

Resource Outputs and Environmental Effects	D	E	F	G	H
Air Quality	(See Alternative A)				
Landscape Character of Forest	The same as Alternative C.	Effects would be the same as Alternative B with the exception that 174,000 fewer acres of roadless areas would be developed, thereby retaining natural character.	More natural character of the Forest will be retained over a longer period of time than any other alternative.	Similar to Alternative B but some steeper lands would not be harvested, resulting in less visual impact in these areas.	Similar to Alternative C but steeper lands where timber harvest is expensive will not be harvested for several decades. The impression will be one of less landscape alteration than Alternative C.
Changes in Recreational Use Patterns	Differences between D and C are probably not noticeable on a Forest-wide basis. More developed setting in certain currently unroaded areas than in Alternative C.	Increased activity and roading will force some users to roadless areas and wilderness. Patterns of use will, however, be similar to the present.	Will retain patterns of use similar to present.	Similar to Alternative B but changes in patterns of use, if any, will be more gradual.	No noticeable differences in recreational patterns of use from Alternatives C or A.
Accessibility for Exploration of Potential Mineralized Areas	Slight (3%) increase in accessibility.	Slight (about 3%) reduction in land area readily accessible.	Less than 1% increase in land area readily accessible.	Moderate increase in accessibility (about 8%).	Slight (3%) increase in accessibility.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Fuelwood for Domestic Use: Accessibility, Quality, Quantity	Fuelwood will be less available in form of large dead trees than present. Wood gatherers will have to be more dependent on logging slash. Quality of wood will be lower than today. Will need to travel further.	By second decade fuelwood will be primarily from logging slash. Will generally be lower quality than available at present.	Similar to Alternative B.	Similar to Alternative A.	Similar to Alternative A.
Hydroelectric Development	No additional restrictions on hydroelectric sites.	Same as Alternative A.	Same as Alternative A.	Wild and scenic river restrictions would prevent hydroelectric development on Lostine, N. Fork John Day and 18 miles of the lower Grande Ronde River.	Same as C.
Transmission Corridors	Transmission corridors are excluded from wilderness and discouraged in the HCNRA and undeveloped dispersed recreation areas (Management Area 6). Management Area 6 varies among the alternatives, but where it occurs there are no known utility corridor needs. Therefore, there is virtually no difference among the alternatives in effects on power transmission corridors.				

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Fuelwood for Domestic Use: Accessibility, Quality, Quantity	Similar to Alternative A.	Similar to Alternative B.	Will have higher quality of wood available longer with less dependence on logging slash than other alternatives. However, lower level of road development may mean difficulty in finding wood, and longer travel distances.	Similar to Alternative F.	Similar to Alternative A.
Hydroelectric Development	Same as Alternative C.	More restrictive than either Alternatives C or D with the addition of the North Powder River to the wild and scenic rivers system.	Most restrictive to hydroelectric development with Joseph Creek placed in the wild and scenic rivers system as well as those shown in Alternative E.	Same as Alternative A.	Same as Alternative C.
Transmission Corridors	Transmission corridors are excluded from wilderness and discouraged in the HCNRA and undeveloped dispersed recreation areas (Management Area 6). Management Area 6 varies among the alternatives, but where it occurs there are no known utility corridor needs. Therefore, there is virtually no difference among the alternatives in effects on power transmission corridors.				

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Effects on Ongoing Economic Trends					
Changes in Industries	Would contribute to timber industry instability through altered species mix (increased lodgepole pine, reduced ponderosa pine), smaller log sizes and reduced harvest volume. Recreation use would increase as population grows. No significant effects on the livestock, recreation, or minerals industries would occur since these industries are not strongly influenced by Forest activities.	Would provide stability for the timber industry. Changes in species mix and log sizes would occur as in Alternative A, but total harvest volume would not be reduced. There would be no significant effects on other area industries.	Would provide stability for the timber industry. The changes in species mix would be similar to Alternative A. Harvest volume would be higher than recent historical levels. The shift to smaller diameter logs would have more impact than in Alternative A since the change would occur more rapidly and log sizes would be less than in any other alternative.	Similar to Alternative A, but with slightly higher timber harvest levels. This would reduce slightly the adverse effects on the timber industry. No significant effects on other area industries would result.	Would provide timber stability through the first decade of implementation. Effects in later decades would be similar to Alternative A. No significant effects on other area industries would result.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Effects on Ongoing Economic Trends					
Changes in Industries	Would affect the timber industry similarly to Alternative A, although the timber harvest volume is somewhat higher. No significant effects on other area industries would result.	Would affect the timber industry similarly to Alternative A, although the timber harvest volume is somewhat higher. No significant effects on other ares industries would result.	Would tend to destabilize the timber industry more than any other alternative, primarily due to substantially reduced timber harvest volume. Effects on species mix would be similar to Alternative A. The change to smaller diameter logs would occur more slowly than in most other alternatives. No significant effects on other area industries would result.	Reduced timber harvest level would tend to destabilize the timber industry, although individual timber sales would likely prove more profitable. Changes in species mix and log size would occur as in Alternative A, but more slowly. No significant changes in other area industries would result.	Similar to Alternative G.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Changes in Occupations & Employment	Changes would occur both in the numbers employed and in the types of employment. Reductions in employment are anticipated because of reductions in timber offerings from the Forest. Some reductions in timber industry employment might be expected in any event due to technological changes. Some increased opportunities will exist for precommercial thinning work and in those sectors related to recreation.	This alternative would reduce the impact of reductions in employment in the timber industry, while impacting other forms of employment very little.	This alternative would increase employment levels in the timber industry, while impacting other forms of employment very little.	Relative to the Current Direction alternative, this alternative would soften the impact of reductions in timber-related employment, while impacting other forms of employment very little.	This alternative would increase employment in the timber industry for the first decade. Would impact other forms of employment very little.
Poverty and Unemployment Patterns	Alternative A would preclude recovery to prerecession (1970's) levels of timber-related employment. No significant effect on unemployment related to the recreation, livestock, or minerals industries are expected as a result of this or any other alternative. This alternative will not contribute to a reduction in area poverty.	This alternative, which approximates recent timber offering levels, would be a marked improvement over that of Alternative A in that it would improve the local situation for for poverty and employment.	This alternative would allow for long-term reduction, both in unemployment and poverty.	This alternative shares the problems identified in Alternative A, but to a lesser degree.	This alternative would allow for reduction in unemployment and poverty in the first decade. Similar to Alternative C in succeeding decades.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Changes in Occupations & Employment	Relative to the Current Direction alternative, this alternative would soften the impact of reductions in timber-related employment, while impacting other forms of employment very little.	Relative to the Current Direction alternative, this alternative would soften the impact of reductions in timber-related employment, while impacting other forms of employment very little.	Area timber-related employment is expected to decrease substantially. Other forms of employment would be affected very little.	Timber-related employment would be expected to drop sharply while impacting other forms of employment very little.	Timber-related employment would be expected to drop sharply while impacting other forms of employment very little.
Poverty and Unemployment Patterns	This alternative would allow reductions in unemployment and local poverty, but to a lesser degree than Alternative D.	Similar to Alternative C.	This alternative would likely increase both area unemployment and poverty because of the sharp reductions it makes in Forest timber offerings.	This alternative would likely increase area unemployment and poverty in the long term to a lesser degree than Alternative F.	Similar to Alternative G.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Social Effects					
Population	Moderately destabilizing. Area has already experienced substantial unemployment due to the protracted downturn in the timber industry. Would serve to retain area population.	Stabilizing. Would provide employment opportunities sufficient to maintain or slightly increase the population associated directly & indirectly with the timber industry.	Stabilizing. Would provide employment opportunities sufficient to maintain or slightly increase the population associated directly & indirectly with the timber industry.	Moderately destabilizing. Area has already experienced substantial unemployment due to the protracted downturn in the timber industry. Would serve to retain area population.	Stabilizing. Would provide employment opportunities sufficient to maintain or slightly increase the population associated directly & indirectly with the timber industry in the first decade. Similar to Alternative C in later decades.
Lifestyles (Work & Leisure)	Those whose lifestyles depend on, or are centered around, a mix of timber harvesting & amenity use of the Forest will find their lifestyles accommodated in this alternative. Their degree of satisfaction will vary depending on their own perception of what constitutes a desirable mix.	To the extent individuals focus on timber processing in their lives, this alternative would benefit them. To the extent they focus on nonwilderness unroaded recreation or on stressing amenities, this alternative would be a setback.	To the extent individuals focus on timber processing in their lives, this alternative would benefit them. To the extent they focus on nonwilderness unroaded recreation or on stressing amenities, this alternative would be a setback.	Those whose lifestyles depend on, or are centered around, a mix of timber harvesting & amenity use of the Forest will find their lifestyles accommodated in this alternative. Their degree of satisfaction will vary depending on their own perception of what constitutes a desirable mix.	Similar to Alternative C. To the extent individuals focus on timber processsing in their lives, this alternative would benefit them.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Social Effects					
Population	Moderately destabilizing. Area has already experienced substantial unemployment due to the protracted downturn in the timber industry. Would serve to retain area population.	Moderately destabilizing. Area has already experienced substantial unemployment due to the protracted downturn in the timber industry. Would serve to retain area population.	Highly destabilizing. Area would experience substantial out-migration.	Destabilizing. area would experience significant out-migration	Destabilizing. Area would experience significant out-migration.
Lifestyles (Work & Leisure)	Those whose lifestyles depend on, or are centered around, a mix of timber harvesting & amenity use of the Forest will find their lifestyles accommodated in this alternative. Their degree of satisfaction will vary depending on their own perception of what constitutes a desirable mix.	Those whose lifestyles depend on, or are centered around, a mix of timber harvesting & amenity use of the Forest will find their lifestyles accommodated in this alternative. Their degree of satisfaction will vary depending on their own perception of what constitutes a desirable mix.	This alternative would be highly disruptive to a substantial portion of the populous whose livelihood depends, directly or indirectly, on timber harvesting.	With the increased emphasis on efficiency & concomitant reduction in timber harvesting this alternative would be acceptable to those whose lifestyles could accept significantly lower timber harvests.	With the increased emphasis on efficiency & concomitant reduction in timber harvesting this alternative would be acceptable to those whose lifestyles could accept significantly lower timber harvests.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Attitudes, Beliefs, & Values	Area inhabitants who have come to accept existing Forest Service practices would most likely find this alternative to be acceptable on the whole.	Those who feel the remaining nonwilderness portions of the Forest should be managed to maximize timber production would like this alternative. Those who feel that the remaining nonwilderness portions of the Forest should be managed to achieve a balanced emphasis for multiple use would find this alternative distasteful.	Many people feel that the Forest should be managed in such a way as to insure that its outputs do not decrease over time. They would be unhappy with this alternative along with those who feel that the level of emphasis on timber in this alternative is to great. Those who feel that a temporary (50 year) increase in timber production is acceptable if necessary for the well-being of local economy would find their beliefs reflected in this alternative.	Area inhabitants who have come to accept existing FS practices would most likely find this alternative to be acceptable on the whole.	Many people feel that the Forest should be managed in such a way as to insure that its outputs do not decrease over time. They would be unhappy with this alternative. Those who feel that a temporary (10 year) increase in timber production is acceptable if necessary for the well-being of local economy would find their beliefs reflected in this alternative.
Community Infrastructure					
Community Cohesion	Mixed. Disruptive to the timber processing sector. Reduced harvest levels would give recognition to the perceived increased influence of the amenity special interest groups.	Unfavorable. Would serve to heighten the influence of the traditional, familiar employment institutions. Would polarize the communities' commodity (timber) vs amenity special interest groups.	Unfavorable. Would serve to heighten the influence of the traditional, familiar employment institutions. Would polarize the communities' commodity (timber) vs amenity special interest groups.	Mixed. Disruptive to the timber processing sector. Reduced harvest levels would give recognition to the perceived increased influence of the amenity special interest groups.	Unfavorable. Would serve to heighten the influence of the traditional, familiar employment institutions. Would polarize the communities' commodity (timber) vs amenity special interest groups.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Attitudes, Beliefs, & Values	Area inhabitants who have come to accept existing FS practices would most likely find this alternative to be acceptable on the whole.	This alternative was tailored to produce substantial amounts of timber on areas which have already been roaded & to leave the remaining roadless areas roadless. This alternative should reinforce the beliefs of the local area inhabitants who requested it.	This alternative would satisfy many who feel the Forest is being harvested too aggressively and/or that the Forest's highest value lies in its ability to offer amenity values.	Because efficiency was highlighted in this alternative, it should best satisfy those who call for increased Forest efficiency. With its lower timber harvest levels, it would conflict with those who believe more commodity emphasis is indicated. Some would be offended because the alternative is given free rein to harvest timber, sharing the same land allocation as Alternative B even though it harvests significantly fewer of those acres due to economic considerations.	This alternative sacrifices significant timber volumes for the sake of efficiency in operation. As such, it would displease those who feel a greater commodity emphasis is indicated, while satisfying those who press for increased economic efficiency. Otherwise, area inhabitants who have come to accept existing Forest Service practices would most likely find this alternative to be acceptable on the whole.
Community Infrastructure					
Community Cohesion	Mixed. Disruptive to the timber processing sector. Reduced harvest levels would give recognition to the perceived increased influence of the amenity special interest groups.	Mixed. Disruptive to the timber processing sector. Reduced harvest levels would give recognition to the perceived increased influence of the amenity special interest groups.	Unfavorable. Significant losses in employment would exacerbate the friction between the timber and the amenity emphasis special interest groups.	Unfavorable. Would heighten antipathy between those whose livelihoods depend on timber processing & those whose livelihoods depend on amenities.	Unfavorable. Would heighten antipathy between those whose livelihoods depend on timber processing & those whose livelihoods depend on amenities.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Civil Rights	Various Civil Rights, Affirmative Action, and Equal Opportunity Acts require that Forest Service hiring, supervisory and contracting practices be conducted in a manner conducive to meeting established Regional and Nationwide goals in these areas. The Wallowa-Whitman National Forest will maintain these practices regardless of the management alternative that is selected. The Forest will continue to take positive steps to ensure that facilities, sites, and activities will not be denied to any individual on account of race, color, creed, sex, marital status, age, handicap, religion, or National origin.				
American Indians					
Social and Economic	Because of relatively low dependence on the Forest for social and economic factors, there will not be noticeable differences among alternatives. However, those tribal members who are employed in the lumber industry will tend to benefit from more commodity-oriented alternatives such as B, D or E as compared with lower timber-producing alternatives such as H or F.				
Subsistence	Slightly lower levels of anadromous fish production and long-term reduction in elk and deer habitat would make Alternative A less desirable than other alternatives.	Increased levels of anadromous fish have a highly favorable effect, but poor big-game habitat would be undesirable.	Increased levels of anadromous fish production would be favorable. Increased grazing and timber harvesting could adversely affect root-gathering, berry-picking, and hunting. Poorer big-game habitat would be undesirable.	Increased salmon and steelhead production would benefit Indian tribes. Reduced timber harvest levels (compared to present) will reduce potential impacts on berry-picking and root gathering sites. Reduction in long-term quality of elk habitat would be undesirable.	Effects similar to Alternative C but slightly greater adverse impacts. Reduction in long-term elk quality would be considered undesirable.
Religious Freedom & Practice	Since these rights are recognized and protected with all alternatives, it is doubtful that differences among alternatives could be detected. However, the potential for disturbance of religious sites is higher with commodity oriented alternatives such as B, B-departure or C-departure. Alternative F would have the least impact.				
Other Racial & Cultural Minorities	The relatively small non-Indian minority population (approximately 1.4 percent) is spread throughout the local work force and therefore is affected similarly by changes which affect employment. Alternative B departure would be most favorable showing an increase of 362 jobs while Alternative F would be least desirable, showing a decrease of 569 jobs (see Table II-3a).				

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Civil Rights	See Alternative A				
American Indians					
Social and Economic	See Alternative A				
Subsistence	Similar to Alternative A but higher grazing levels may cause greater adverse impacts on root gathering potential. Poor elk habitat would be undesirable.	Similar to Alternative A.	Having high fish production and high wildlife levels, this is the most favorable alternative from American Indian subsistence standpoint. High quality elk habitat would be considered desirable.	Similar to Alternative B but slightly less impacting overall. Poorer quality elk habitat would be considered undesirable.	Similar to Alternative C .
Religious Freedom & Practice	See Alternative A				
Other Racial & Cultural Minorities	See Alternative A				

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Land Use Changes					
Prime Farmlands, Rangelands, and Forest land	All alternatives fully satisfy the objectives for management of prime farmlands, rangelands, and forest lands, as identified in the USDA Secretary's Memorandum No. 1827. The mix of commodity and/or amenity values derived from these lands will vary in the same way as on the rest of the Forest.				
Wetlands and Floodplains	There will be little difference among the alternatives in treatment of, or effects on, floodplains and wetlands. All alternatives fully meet the goals and objectives for wetlands and floodplains as identified in Executive Orders 11988 and 11990. The risk of adversely affecting wetlands or floodplains is slightly higher in commodity-oriented alternatives than in amenity-oriented alternatives because the extent and intensity of such activities as timber harvest, road construction, and livestock grazing are greater.				
Threatened and Endangered Species	No change is expected regardless of alternative for peregrine falcon and MacFarlane's four o'clock. The historical sitings and potential area for recovery of these populations lie largely within wilderness. Standards and guidelines provide for maintenance of sufficient habitat to meet the recovery objective levels for northern bald eagle in all alternatives. Opportunity for expansion beyond these levels after the first decade will tend to vary inversely with timber harvest calculated for each of the alternatives (the higher the timber production level, the more likely it is that potential roost and/or nest trees will be harvested).				
Elk Populations and Distributions	Elk population will tend to remain at or near current levels with little displacement of these populations from any portion of the Forest.	Elk populations potentially reduced with significant displacement of summering elk from gentle (tractor-loggable) ground because of shortages of cover and increased roading. Some displacement may also accompany increased livestock numbers. Limited displacement of elk from portions of the winter range may occur as a result of less than optimum habitat conditions.	Elk populations may be significantly reduced. Displacement of summering elk from the gentle (tractor-loggable) and short-span skyline grounds because of shortages of cover and the greatly increased level of roading. Significant displacement of elk may also accompany the increased numbers of livestock planned for this alternative. Deer will be less dramatically affected by these changes. Displacement of elk from portions of the winter range is possible due to less than optimum habitat conditions.	Slight reduction in elk populations may occur. Elk displaced from gentle grounds on portions of their summer ranges. Some ranges have optimum cover objectives which will tend to improve distribution of elk over those portions. Some displacement of elk due to increased numbers of cattle. Near-optimum habitat may allow improved distribution of elk across big-game winter ranges.	Elk populations may be reduced due to displacement of elk from portions of their summer ranges as in Alternative C. Displacement may be accelerated because of the accelerated harvest levels. Near-optimum habitat may allow better distribution of elk across big-game winter ranges.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	[illegible]	H
Land Use Changes					
Prime Farmlands, Rangelands, and Forest land	See Alternative A				
Wetlands and Floodplains	See Alternative A				
Threatened and Endangered Species	See Alternative A				
Elk Populations and Distributions	Elk populations may be reduced as a result of displacement of elk from major portions of their summer ranges. Some displacement may accompany increased cattle numbers. Near-optimum habitat may allow improved distribution of elk across big-game winter ranges.	Elk numbers may be reduced. Displacement of elk across much of their gentle grounds on their summer ranges may accompany timber harvest. Existing cover in roadless areas maintained. Little displacement from interactions with livestock. Some displacement of elk from portions of big-game winter range due to less optimal habitat conditions.	Potential for elk populations to increase over the planning horizon as optimum cover/forage objectives are achieved. Distribution of elk may be improved over most of the forest. Reduced displacement of elk arising from interactions with cattle. Near-optimum habitat may allow better distribution of elk across big game winter ranges.	Some reduction in elk populations may be expected. Significant displacement of elk from gentle grounds across most of their summer range following logging. More cover will be left on steep slopes in the early decades in this alternative than would be expected in Alternative B. Little or no change in displacement of elk due to interaction with cattle. Some displacement of elk from portions of big-game winter range due to less optimum habitat conditions.	Elk populations may be slightly reduced. Displacement of elk from gentle lands across portions of summer ranges may be expected similar to Alternative C, but with more substantial cover on steep slopes. Little displacement due to interactions with livestock. Near-optimum habitat conditions may allow improved distribution of elk across big-game winter ranges.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	A (No Action)	B (RPA)	B-dep (FPFO)	C (Proposed Action)	C-dep
Small Game and Non-game Species; Populations, Distributions	Species associated with early forest successional stages will increase in all alternatives. Those associated with snags or mature and old-growth forest successional stages will decrease in all alternatives. Population decreases of snag, mature or old-growth associated species will be greatest in the alternatives providing the highest levels of timber output. Distributions of these species will be best in alternatives with the most limited timber harvest.				
Pest Management	Bark beetles, dwarf mistletoe, tree and root heartrots will present less serious problems as more stands are intensively managed for timber production. However, defoliators such as the spruce budworm and Douglas-fir tussock moth will continue to cause problems. Control through the use of insecticides will depend on cost-benefit considerations. This makes it likely that there will be periodic outbreaks and resultant brown colored trees over extensive areas.	Similar to Alternative A except that with many more acres intensively managed, there will be better control of many pest species.	Similar to Alternative B.	Similar to Alternative A.	Similar to Altern-A.
Plant Diversity	Some increases in dominance of lodgepole pine, ponderosa pine, Douglas-fir and western larch in all alternatives. Greatest in alternatives B-departure, B and D. Strongest representation of white fir, subalpine fir and spruce in Alternatives F and H. Shade intolerant (e.g., huckleberry, many grasses) understory species will be favored in all alternatives.				
Wild & Scenic River Recommendations	Snake River would remain in the wild and scenic river system. Unlikely that outstandingly remarkable characteristics in most streams would be altered by lack of classification, but hydro-electric development could occur on several streams.	Same as Alternative A except that timber harvesting and/or roadbuilding would encroach on potential wild and scenic corridors along N. Fork John Day, Grande Ronde, Joseph Creek, N. Powder River and Eagle Creek.	Same as Alternative B.	Same as Alternative A except that the Grande Ronde River, within the National Forest boundary, non-wilderness portion of the Lostine and non-wilderness portion of the N. Fork John Day would be added to the Wild and Scenic System.	Same as Alternative A except that the Grande Ronde River, within the National Forest boundary, non-wilderness portion of the Lostine and non-wilderness portion of the N. Fork John Day would be added to the Wild and Scenic System.

Table II-3b (Continued)
QUALITATIVE RESOURCE OUTPUTS AND ENVIRONMENTAL EFFECTS

	D	E	F	G	H
Small Game and Nongame Species, Populations, Distributions	See Alternative A				
Pest Management	Similar to Alternative A.	Similar to Alternative B except that greater amount of roadless area will result in more mature tree stands that are more susceptible to insects and disease.	Likely to have greater incidence of insects and disease than other alternatives due to greater amounts of susceptible (mature and overmature) trees. Will be somewhat offset by correspondingly higher levels of insect predators such as woodpeckers. Otherwise similar to Alternative A.	Similar to Alternative B.	Similar to Alternative A.
Plant Diversity	See Alternative A				
Wild & Scenic River Recommendations	Same as Alternative A except that the Grande Ronde River, within the National Forest boundary; nonwilderness portion of the Lostine and nonwilderness portion of the N. Fork John Day would be added to the wild and scenic river system.	Would add the Grande Ronde within the National Forest boundary, nonwilderness portion of the Lostine, nonwilderness portion of the N. Fork John Day within the Forest, and N. Powder within the Forest.	Same as Alternative E except Eagle Creek and Joseph Creek would be added to the wild and scenic rivers system.	Same as Alternative B.	Same as Alternative C.

Tradeoffs Among Alternatives

Overview

Forest management affects a wide range of people, varying geographically as well as thematically. Some are primarily concerned about the Wallowa-Whitman National Forest because it is their closest National Forest, the Forest which, therefore, best meets their needs for local recreation. Others, overwhelmingly Oregon residents, see the Forest as their venue for big-game hunting. Still others see the Wallowa-Whitman as the basis for their livelihoods, whether it be logging, guiding, livestock grazing, or mining. Every individual's perspective is different and is itself a combination of perspectives--work-related and recreational.

At other levels, people are concerned about how Wallowa-Whitman outputs affect the State economy or the National recreation picture. In this array of considerations, no one individual fits into a single slot, no one is unaffected by the needs and aspirations of others.

Local area inhabitants are affected by Forest activities directly (as in the case of loggers); indirectly (as in the case of a saw repair shop); and through their expenditures in the local economy (theaters, restaurants, and so on). The Forest's influence is pervasive in the local area because its activities determine how much money the Federal treasury will remit to the local governments from the "25 percent fund," the key component of area road and school budgets.

Briefly, those whose main interest in the Forest arises from its ability to generate commodities would be well served by Alternatives B-departure, B, and D. Following those three would be C-departure, E, C, A, G, H, and F--in that order. The placement of D as being more commodity-oriented than C-departure is disputable. That placing was used because Alternative D generates more sawtimber volume after the first decade and more livestock grazing. This seemed to overshadow C-departure's high first decade sawtimber volume.

Amenity interests appear to be best served by Alternatives F, H, and A in that order. Alternatives C, E, and G would follow but their placing is arguable. Those with a particular or overwhelming interest in maintaining roadless areas would rank E number one--perhaps in front of all other alternatives. Those whose amenity inclination centers on overall land usage would likely place C in front of E and G. Those whose interests in amenities combine with a concern for efficiency might place Alternative G first. Alternatives C-departure, D, B, and B-departure complete the field, becoming progressively less satisfying to amenity interests.

Differences in Economic Values Among Alternatives

As shown in the following tables, Alternative G generates the highest present net value, the primary criterion for economic efficiency. It achieved this standing because it was restricted less than any other alternative. It precluded timber harvesting on any stand which would not generate a positive present net value independently. All other alternatives were assigned minimum timber targets. The allowable sale quantities for Alternatives A, B, B-departure, C, C-departure, D, and E are all higher than that generated (27.1 MMCF per year) for the maximum PNV benchmark. The model therefore sacrificed efficiency in order to meet the timber targets which were in excess of what would be achieved under an efficiency maximization (maximize PNV) formulation. These targets were assigned to respond to the need for employment opportunities in the local area, one of the Forest's issues.

Alternative B gives up $22 million in present net value to Alternative G (as shown in Table II-4) because it was assigned a high timber target. Achieving this timber target of 159 MMBF in decade one, an increase of 32 MMBF over Alternative G's economically efficient level of 127 MMBF, cost $22 million. Annualizing that $22 million loss over the 31 MMBF in extra volume per year results in a loss of $28 per MBF. While both G and B share the same FORPLAN data input set, Alternative B harvests the Lake Fork Roadless Area in order to meet its assigned timber target. Alternative G with no such timber target leaves the area unharvested. Table II-5 disaggregates the benefits and costs which comprise present net value. Cost categorization is necessarily approximate due to the multiple use nature of the Forest.

Throughout this document reference is be made to timber offerings in board foot measure. FORPLAN, however, uses cubic foot measure alone. Therefore, all board foot timber targets were converted to cubic foot measure for input to FORPLAN and conversely FORPLAN outputs were converted to board foot measure. Because the Forest has a wide range of conversion ratios in different timber stands, depending on such considerations as species, age, and condition, these efforts are necessarily approximate.

The effects of high timber targets on economic efficiency are shown in Alternative B-departure which sacrifices $183 million in present net value to generate average annual timber offerings 59 MMBF higher than the five-decade average Alternative G level. The true cost of implementing Alternative B-departure would be even higher than the $183 million shown. This is due to the fact that Alternative B-departure was allowed to violate NFMA which requires that regeneration harvests shall not occur unless stands generally have achieved culmination of mean annual increment.

In B-departure, stands are generally harvested prior to culmination of mean annual increment. If Alternative G were run free of that requirement, as was Alternative B-departure, its present net value would have been even higher. The $183 million is, therefore, an underestimation of the loss in present net value.

Alternatives H, C, and C-departure share the same land allocation but vary with respect to meeting timber targets. The primary reason this land allocation generates lower present net value figures is that it imposes more restrictions on timber harvest. These restrictions include fewer acres available due to increased emphasis on roadless recreation and old-growth timber; additional constraints added to the rate of timber harvest on big-game winter ranges, some big-game summer ranges and anadromous fisheries emphasis areas; and more acres allocated to visual retention and partial retention.

Moving from Alternative H's five-decade average annual sawtimber harvest level of 131 MMBF to Alternative C's 143 MMBF costs about $22 million in present net value. Annualizing this cost shows that choosing Alternative C rather than Alternative H would be done at a cost of about $900,000 annually or about $68 per MBF. Alternative C-departure, with higher first-decade harvest levels (177 MMBF) is $12 million lower in present net value than Alternative C.

Alternative E was formulated in response to the wishes of those citizens who felt the Forest should manage its roaded areas intensively for timber and stay out of the remaining roadless areas. It manages to do this and to still generate a present net value some 93 percent of the highest for any alternative. Its land allocation is more restrictive than is that used for G, B, or B-departure. Compared to the land allocation in H, C, and C-departure, that used in Alternative E is more restrictive in some respects, less restrictive in others. Alternative E effectively establishes the roaded sections of the Forest for intensive timber management while the land allocation in Alternatives H, C, and C-departure reserves much of this land for less intensive timber management to meet other multiple use objectives.

As shown in Table II-5a, Alternatives E, C, D, and F all share a common timber target when expressed as a percentage of the maximum possible nondeclining flow first-decade timber harvest on their respective land allocations. Timber targets are respective to the individually determined land allocations. Alternatives E, C, and D with their similar first-decade offerings of 145, 143, and 149 MMBF indicate comparable maximum timber harvest capabilities. In the balance, Alternative E's land allocation would be viewed as being less restrictive to timber harvesting than is Alternative C's.

Table II-4
DIFFERENCES IN ECONOMIC EFFICIENCY CRITERIA BY ALTERNATIVE
1982 MILLION DOLLARS
4% DISCOUNT RATE FOR 150 YEARS
(Ranked in Area of Decreasing Present Net Value)

		ALTERNATIVE									
Benchmark or Alternative	MAX PNV BM 1/	G	B	H	E	C	D	C-dep	F	A 2/	B-dep 3/
Present Net Value	669	651	629	620	606	598.2	598.1	586	574	556	468
Incremental Differences in Present Net Value		-18	-22	-9	-14	-8	-0	-12	-12	-18	-88
Discounted Economic Benefits	1,102	1,072	1,130	1,054	1,084	1,073.7	1,090.7	1,086	983	1,031	1,094
Incremental Differences in Discounted Economic Benefits		-30	+58	-76	+30	-11	+18	-5	-103	+48	+63
Discounted Economic Costs	433	421	501	434	479	475	492	500	409	476	626
Incremental Differences in Discounted Economic Costs		-12	+80	-67	+45	-4	+18	+7	-91	+67	+150
Benefit/Cost Ratio		2.55	2.26	2.43	2.26	2.26	2.21	2.17	2.40	2.12	1.75

1/ Pacific Northwest Region FORPLAN Run 7, benchmark 1.

2/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

3/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

Table II-5
PRESENT NET VALUE, DISCOUNTED BENEFITS, AND DISCOUNTED COSTS BY RESOURCE GROUPS 1/
1982 MILLION DOLLARS

Alternative	G	B	H	E	C	D	C-dep	F	A 2/	B-dep 3/
Present Net Value	651	629	620	606	598.2	598.1	586	574	556	468
Discounted Benefits										
Timber	430	479	403	435	417	439	424	325	381	447
Recreation	589	589	595	596	595	591	600	608	600	585
Range	35	40	33	34	39	40	39	30	35	40
Other 4/	18	22	23	20	22	21	22	20	15	22
Total	1,072	1,130	1,054	1,085	1,073.7	1,090.7	1,085	983	1,031	1,094
Discounted Costs										
Timber 5/	90	132	101	127	121	131	130	94	130	186
Roads 6/	145	172	147	163	163	170	176	136	161	235
Recreation 7/	41	46	45	45	45	43	45	45	39	46
Range 8/	21	21	17	18	20	21	20	15	21	23
Other 9/	124	130	124	126	126	128	129	119	125	136
Total	421	501	434	479	475.0	492.6	500	409	476	626

1/ Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but they may be misleading because many outputs in multiple use have common costs of production that cannot be reliably separated and attributed to individual resources. Displayed in order of decreasing present net value.

2/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

3/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

4/ Primarily water, but also anadromous fish and miscellaneous collections.

5/ Costs shown are for E-prefixed MIH codes. As discussed in Appendix B, timber-related costs include many outside the formally designated timber program.

6/ Costs shown are those related to the Forest facilities program, the bulk of which is a cost to the timber program.

7/ Costs shown are those from the Forest's recreation, wilderness and fish and wildlife programs costs.

8/ Costs shown are those from the livestock grazing program.

9/ Costs shown are those from the Forest programs not elsewhere classified. The bulk of these costs are associated with the timber program.

The allowable sale quantities for Alternatives A, B, B-departure, C, C-departure, D, and E are all higher than that generated (27.1 MMCF per year) for the maximum PNV benchmark. This is because all these alternatives were driven, to varying degree, to respond to the timber issue by offering more sawtimber volume for sale than would be the case under strict conditions of maximizing efficiency.

Alternative F is the alternative which most emphasizes amenities. It dedicates extensive areas of the Forest uses exclusive of timber harvest with a resulting decrease in timber outputs as well as present net value. Assignment of a timber target to an amenity emphasis alternative may seem incongruous to many. The purpose of inserting the timber target was to reduce the potential adverse impacts of this alternative on the local economy. Without the timber target, first decade output levels would be approximately 66 MMBF rather than the 100 MMBF identified for the alternative.

The Forest's current management direction is summarized by Alternative A. It reflects the direction contained in the Forest's various unit plans which were designed to manage different sections of the Forest. It does not meet MMR's for wildlife. Existing harvest levels (159 MMBF) cannot be maintained under this alternative's land allocation. Timber output levels of 139 MMBF are the highest levels consistent with the alternative's budget constraint which is itself based on a multiyear record of experienced costs. This is the only alternative run with a budget constraint and the only alternative run at 99 percent maximum of timber production. These differences, combined with the unique land allocation based on existing unit plans, make comparison with other alternatives difficult. Perhaps most noticeable is the fact that in terms of timber production, Alternative A has--except for Alternative F--the most restrictive land allocation.

Net Cash Flow

Table II-6 displays the Forest's net cash flow over time by alternative. This information is presented to answer the recurring question of how the Forest's cash receipts compare with its cash expenditures. Because the timber program accounts for nearly 99 percent of all Forest receipts, the discussion here will focus on their variation over time by alternative. Variations were made in Forest outputs for range levels and attendant grazing receipts. No changes are projected between alternatives for miscellaneous receipts.

Receipts

The primary factors that affect timber receipts are the amount of timber sold, the species, its quality, and its accessibility. As long as costs of harvesting and management investments do not exceed the timber value, increased harvest volumes result in increased timber receipts. Timber sales may blend a certain portion of noneconomic stands with economic stands and still provide attractive sale packages. All Forest alternatives except G (which allows harvest only on those stands which can generate positive present net values independently) adopt this practice.

Table II-5a
TIMBER TARGETS ESTABLISHED BY ALTERNATIVE

	ALTERNATIVE									
	G	B	H	E	C	D	C-dep	F	A 1/	B-dep 2/
FORPLAN Run Identification	616175	616167	616188	616150	616190	616154	616193	616151	616200	616195
Percentage of Maximum Timber Production Possible in Decade 1 (Used as a Timber Target)	No Target--Maximized Efficiency	85	80	90	90	90	116 Departure	90	99 With Budget Constraint	96 Departure
Actual Timber Target Assigned (MMCF/Year in Decade 1)	No Target--Maximum Efficiency Resulted in Output Level of 25.5	31.9	25.2	29.1	28.3	30.2	36.5	21.5	28.2	36.0

1/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

Another feature to be considered is the role played by timber targets which were assigned every alternative but G. These targets were assigned the alternatives in response to each alternative's emphasis on issues, concerns, and opportunities. Achievement of timber targets in alternatives with highly restrictive land allocations (in terms of timber harvest) is generally more difficult and thus more costly in terms of present net value. Increasing average annual sawtimber offerings 31 MMBF cost about $30 per MBF in shifting from Alternative G to Alternative B whereas only 12 MMBF would be gained at a cost of $84 per MBF in the more restrictive land allocations shared by Alternatives C and H. The effect of setting minimum timber harvest levels (floors) on present net value in any given land allocation is reflected in Table II-6a.

These reductions in present net value arise because the mix of objectives requires the model to harvest timber which is economically less desirable due to its species mix, quality, or accessibility.

Species mix affects timber receipts in several ways. The obvious implication from a shift in species harvested is that more valuable species bring a greater return than do the lesser-valued species. More subtle effects arise due to differences in timber yield tables, silvicultural practices, and alternative-respective responses to issues, concerns, and opportunities. Timber quality relates to such factors as timber size and freedom from defect and knots. Accessibility accounts for differences in the costs of extracting timber due to such site-respective considerations as the logging system required (tractor, shortspan or longspan cable, helicopter); harvest method (thinning, clearcutting, overwood removal); and degree of roading required.

Consider the land in timber management as shown in Table II-6a. As progressively higher timber targets are assigned any particular land allocation, more acres of timber land are brought into timber production and the present net value declines. Alternative G, free from any timber harvest floor, schedules virtually no longspan cable or helicopter ground in decade 1 (Table II-6b) and about 18 percent less lodgepole pine sawtimber than does Alternative B (Table II-6c). By the second decade, Alternative G is only taking about 1 percent of its sawtimber from lodgepole pine while Alternative B is at 18 percent (Table II-6c).

Alternative B, with a first-decade timber harvest 25 percent higher than that economically indicated, still manages on the whole to bypass the difficult and costly-to-log helicopter and longspan cable lands. However, it must increase its incidence of shortspan cable logging by about 50 percent (in the first decade) over that specified in Alternative G. It must also absorb the costs of accessing the Lake Fork Roadless Area which Alternative G elected to avoid for economic reasons.

With the even higher timber targets contained in B-departure, the model is forced to harvest longspan cable and helicopter lands even in the first decade (Table II-6b) to the extent that those expensive logging systems are used on about 10 percent of the acres harvested.

Similar patterns are evident in the timber-amenity blend land allocation used for Alternatives H, C, and C-departure. Alternative H harvests no longspan or helicopter ground in the first decade while Alternative C harvests that land type to the extent that it makes up about 5 percent of its total acres harvested (Table II-6b). Likewise, while Alternative H harvests shortspan ground in the first decade on 18 percent of its total area harvested, Alternative C harvests it on 23 percent. Alternative H harvests only 11 percent of the available sawtimber in the first five decades from lodgepole stands. Alternative C uses lodgepole to make up over 17 percent of its volume (Table II-6c). Alternative C-departure follows this same trend, moving more heavily into both shortspan cable lands (25 percent) and longspan-helicopter lands (6 percent) in the first decade.

Timber quality includes consideration of whether the material is suitable for sawing (sawtimber); pulping or chipping (roundwood); or personal use fuelwood. Sawtimber is the only material tracked in FORPLAN. Another dimension of quality relates to the conversion ratio or the amount of board feet which can be produced by a single cubic foot of sawtimber. This is primarily a concern in new tree stands which are still growing rapidly and which, therefore, are still experiencing significant changes in conversion ratios over time. The earlier a new stand is harvested, the less its value per cubic foot.

These characteristics are included in FORPLAN dollar valuations so the model can consider these changes in value over time, along with other differences, in making its harvest decisions. The higher the timber target, the earlier stands are likely to be scheduled for harvest. This is illustrated in Table II-7 which shows Forest receipts over time. Compare the receipt figures for Alternatives B and B-departure. Alternative B-departure was run with its achievement of CMAI constraint relaxed. This helps show, in an exaggerated way, the effects of harvesting early in the rotation cycle. Notice that Forest receipts are higher in Alternative B than in Alternative B-departure by the fifth and the sixth decades. A great deal of this effect is caused by Alternative B-departure's early entry into regenerated stands which have not achieved culmination of their economic efficiency.

The term accessibility reflects on the stand's proximity to the established road system and to the local processors, as well as to the site-specific characteristics which determine to a great extent what logging systems may be employed. Timber values are adjusted within FORPLAN to reflect differences in net value which result from using more costly logging systems as opposed to less costly logging systems.

Costs

Forest costs are covered in detail in Appendix B. The discussion here relates to differences in costs among alternatives as portrayed in Table II-6b.

Table II-6

AVERAGE ANNUAL NET CASH FLOWS, RECEIPTS, AND COSTS BY ALTERNATIVE FOR THE FIRST, SECOND, FIFTH AND SIXTH DECADES, UNDISCOUNTED
1982 MILLION DOLLARS
(Ranked in Order of Decreasing Present Net Value)

Alternative	G	B	H	E	C	D	C-dep	F	A 1/	B-dep 2/
Present Net Value	651	629	620	606	598.2	598.1	586	574	556	468
Decade 1										
Noncash Benefits 3/	23.006	23.929	23.282	23.656	24.305	24.127	26.407	23.300	24.307	25.436
Cash Receipts 4/	13.582	15.452	12.138	13.966	12.778	13.742	14.243	8.795	12.066	10.302
Costs 5/	15.694	18.677	15.994	17.983	17.818	18.274	20.261	15.215	17.069	22.421
Net Cash Flow 6/	-2.112	-3.225	-3.856	-4.017	-5.040	-4.532	-6.018	-6.420	-5.003	-12.119
Decade 2										
Noncash Benefits 3/	26.261	26.470	26.536	26.418	26.515	26.892	26.076	27.035	26.979	27.660
Cash Receipts 4/	14.659	16.286	12.567	14.875	13.432	14.080	11.875	9.631	12.380	18.076
Costs 5/	14.653	17.271	14.879	16.434	16.052	16.838	15.967	13.557	16.591	20.144
Net Cash Flow 6/	+0.006	-0.985	-2.312	-1.559	-2.620	-2.758	-4.092	-3.926	-4.211	-2.068
Decade 5										
Noncash Benefits 3/	32.961	34.190	33.954	33.775	34.295	34.203	34.182	34.031	34.153	38.704
Cash Receipts 4/	18.908	19.319	16.903	13.945	13.762	13.851	13.460	16.033	7.899	0.837
Costs 5/	14.141	16.539	14.257	15.400	15.105	15.488	14.613	13.857	15.004	19.122
Net Cash Flow 6/	+4.767	+2.780	+2.646	-1.455	-1.343	-1.637	-1.153	+2.176	-7.105	-18.285
Decade 6										
Noncash Benefits 3/	33.532	33.543	33.613	32.989	33.663	33.316	33.718	33.844	33.156	33.271
Cash Receipts 4/	16.951	17.670	15.757	15.473	15.962	15.314	14.250	17.577	14.511	11.514
Costs 5/	13.857	15.809	13.935	15.726	14.809	15.790	14.504	13.553	15.055	15.814
Net Cash Flow 6/	+3.094	+1.861	+1.822	-0.253	+1.153	-0.476	-0.254	+4.024	-0.544	-4.300

1/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.
2/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.
3/ Noncash benefits are those not collected as cash receipts.
4/ Comprises timber stumpage receipts (statistical high bid), grazing fee receipts, and miscellaneous receipts.
5/ All Forest costs except those for purchaser credit roads, co-op road maintenance, and treatment of activity fuels which costs are already reflected in lower statistical high-bid values.
6/ The difference between the receipts and the costs shown.

Table II-6a
EXAMPLES OF PRESENT NET VALUE RESPONSE TO TIMBER HARVEST MINIMUM LEVELS (FLOORS) 1/

Timber Emphasis Land Allocation Input to FORPLAN

Alternative	G	B 2/	B-dep
Present Net Value (1982 Million $)	651	629	468
Timber Harvest Floor in Decade 1 (MMCF/Year)	3/	31.9	36.0
Land in Timber Management (Thousands of Acres)	801	875	937

Timber-Amenity Blend Land Allocation Input to FORPLAN

Alternative	H	C	C-dep
Present Net Value (1982 Million $)	620	598.2	586
Timber Harvest Floor in Decade 1 (MMCF/Year)	25.2	28.3	36.5
Land in Timber Management (Thousands of Acres)	784	832	843

1/ Other factors change the present net value, but only to a small extent. They do not mask the effects explained in the narrative.
2/ Alternative B-departure cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.
3/ Yielded 25.5 MMCF/year in decade 1 without a timber harvest floor.

Table II-6b
TIMBER OUTPUTS AND ACTIVITIES BY ALTERNATIVE

All figures represent average annual conditions in the first decade except for PNV and B/C which reflect the entire planning horizon. All dollar figures are in 1982 terms except for those shown for the FY 1985 budget.

	1/ PNV MM$	2/ B/C	Timber Sale Volume 3/ X06 MMCF	Timber Sale Volume 3/ X06 MMBF	Timber Sale Volume 4/ X07 MMCF	Timber Sale Volume 5/ X08 MMCF	Timber Sale Volume SUM MMCF	6/ Tmbr Mgt M.AC.	7/ Harvest Method T-SS-LSH M.Ac/Yr	8/ Prchsr Credit Roads MM$	8A/ Plt Ac.	9/ E04 Acres	10/ TSI Ac	11/ Tmbr Rltd Bdgt MM$	12/ Sum Bdgt MM$	Jobs	Prsnl Incom MM$	Pmts To Cnts MM$
Historical Levels																		
Latest FY 1985 Budget			22.8	127	8.6	5	36.4				2407	4731	3230		19.4			
Recent Historical			28.6	159	9.6	5	43.2					3253	3942	8.9	23.1	3633	60.0	3.678
Alternatives																		
A (Current Direction)	556	2.12	28	139	8	5	41	862	16-5-1	3.3	3436	4909	7332	11.4	21.2	3526	56.7	4.370
B (RPA)	629	2.26	32	158	9	5	46	875	18-4-0	2.9	2804	4005	7808	11.3	22.3	3757	61.3	5.028
B-Departure (FPFO) 13/	468	1.75	36	179	10	5	51	937	15-11-3	4.7	5902	8432	10154	16.0	22.9	3995	66.2	4.615
C (Proposed Action)	598	2.26	28	143	8	5	41	832	16-5-1	3.2	3221	4602	6758	11.0	21.7	3580	57.7	4.483
C-Departure	586	2.17	36	177	10	5	51	843	22-8-2	4.6	4029	5755	6599	14.3	25.8	3991	66.0	5.318
D	598	2.21	30	149	8	5	43	844	17-5-1	3.1	3046	4351	7473	11.3	22.0	3657	59.2	4.675
E	606	2.26	29	145	8	5	42	802	16-3 0	2.7	2945	4207	8069	10.8	21.4	3590	53.0	4.643
F	574	2.40	22	100	6	5	33	788	13-3-1	2.3	3030	4329	1442	8.2	18.0	3064	42.5	3.231
G	651	2.55	26	127	7	5	38	801	14-2-0	2.1	2178	3111	4910	8.3	18.4	3381	53.8	4.189
H	620	2.43	25	123	7	5	37	784	14-3-0	2.4	2208	3154	5392	8.7	18.9	3339	53.0	3.928

1/ Present net value for 15 decades.
2/ Benefit:cost ratio for 15 decades.
3/ Sawtimber - This is the volume of softwood sawlogs and veneer bolts sold.
4/ Roundwood - This is the volume of softwood roundwood other than sawtimber and fuelwood.
5/ Softwood personal use fuelwood.
6/ M.acres which come into solution for timber management during the first 15 decades.
7/ Harvest method -- Tractor:Shortspan Cable:Longspan Cable and Helicopter -- in percent.
8/ Purchaser credit road expenditures in millions of dollars.
8A/ Acres planted. This figure is also included in the total amount of reforestation activity shown in 9/.
9/ Reforestation - Includes all acres where activities aiding the reestablishment of a tree cover are employed; includes 8A/.
10/ Precommercial thinning acres.
11/ Total timber-related budget including other resource support for the timber program.
12/ Total Forest budget. Includes $1.14 million annually for construction of capital investments as designated in the HCNRA Comprehensive Management Plan in all alternatives except Alternative A. Latest FY 1985 budget includes $1.5MM(PCR).

13/ Alternative formulated to meet timber output levels prescribed by "Forestry Program for Oregon".

Table II-6c
PROPOSED TIMBER HARVEST PER YEAR BY ALTERNATIVE

Decade	Component	Recent Levels 1979-1983		A		B		B-dep		C		C-dep		D		E		F		G		H	
		MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF
	Sawtimber																						
1	P,D,F,S,L 1/	27.1	155	21.8	121	24.7	138	28.1	157	23.3	129	27.7	152	23.4	130	23.0	128	14.6	80	20.3	112	19.3	106
	LP 2/	1.5	4	6.4	18	7.2	20	7.9	22	5.0	14	8.8	25	6.8	19	6.1	17	6.9	20	5.2	15	5.9	17
	Roundwood 3/ 4/	9.6		7.8		8.8		9.9		7.8		10.1		8.3		8.0		5.9		7.0		6.9	
	Fuelwood 4/	5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/	43.2	159	41.0	139	45.7	158	50.9	179	41.1	143	51.6	177	43.5	149	42.1	145	32.4	100	37.5	127	37.1	123
	Sawtimber																						
2	P,D,F,S,L 1/			23.2	128	26.0	143	36.0	198	21.4	118	20.9	115	23.7	148	24.3	134	18.0	99	25.2	139	20.6	113
	LP 2/			5.0	14	5.9	17	1.2	3	6.9	19	5.7	16	6.5	9	4.8	13	3.5	10	0.3	1	4.6	13
	Roundwood 3/ 4/			6.5		7.4		8.6		6.5		6.2		7.0		6.7		5.0		5.9		5.8	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			39.7	142	44.3	160	50.8	201	39.8	137	37.8	131	42.2	157	40.8	147	31.5	109	36.4	140	36.0	126
	Sawtimber																						
3	P,D,F,S,L 1/			26.7	147	31.7	174	39.5	217	28.1	155	26.5	146	30.1	165	28.9	159	17.0	94	25.5	139	24.9	137
	LP 2/			1.5	4	0.2	1	0.2	1	0.2	1	0.1	1	0.1	1	0.2	1	4.5	13	0.1	1	0.3	1
	Roundwood 3/ 4/			5.2		5.8		7.3		5.2		4.9		5.5		5.3		3.9		4.7		4.6	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			38.4	151	42.7	175	52.0	218	38.5	156	36.5	147	40.7	166	39.4	160	30.4	107	35.3	140	34.8	138
	Sawtimber																						
4	P,D,F,S,L 1/			20.2	111	29.2	161	24.6	135	22.6	124	23.3	128	26.6	155	25.3	139	17.3	95	20.8	114	24.1	133
	LP 2/			8.0	22	2.7	8	16.4	46	5.7	16	3.3	10	3.6	6	3.8	11	4.2	12	4.7	13	1.1	3
	Roundwood 3/ 4/			5.2		5.8		7.5		5.2		4.9		5.5		5.3		3.9		4.7		4.6	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			38.4	133	42.7	169	33.5	181	38.5	140	36.5	138	40.7	161	39.4	150	30.4	107	35.2	127	34.8	136
	Sawtimber																						
5	P,D,F,S,L 1/			22.2	122	26.7	147	24.4	134	21.3	117	21.3	117	22.4	152	21.8	110	20.8	114	21.6	119	23.0	126
	LP 2/			6.0	17	5.2	15	16.6	47	7.0	20	5.3	15	7.8	7	7.3	21	0.7	1	3.9	11	2.2	6
	Roundwood 3/ 4/			5.2		5.8		7.5		5.2		4.9		5.5		5.3		3.9		4.7		4.6	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			38.4	139	37.7	162	53.5	181	38.5	137	36.5	132	40.7	159	39.4	131	30.4	115	35.2	130	34.8	132

1/ Tree species other than lodgepole pine (P - ponderosa pine, D - Douglas-fir, F - true fir, S - Engelmann spruce, L - western larch).
Regulated volume - included in allowable sale quantity.

2/ Lodgepole pine exceeding five inches in diameter. Regulated volume - included in allowable sale quantity.

3/ Volume other than fuelwood or sawtimber; includes cull material, small diameter (less than five inches) material, and dead material. Unregulated volume - not included in the allowable sale quantity.

4/ No board foot volume is shown since these products are normally not sawn into boards and are not sold on a board foot basis.

5/ The total represents the Timber Sale Program Quantity.

With the exception of Alternative A, which alone has a budget constraint at recent historical levels, all alternatives provide for constructing all capital improvements specified in the Hells Canyon National Recreation Area Comprehensive Management Plan as close to the specified time frame as possible. Alternative A reflects the historical record of accomplishments and stretches out the completion date for these projects well into the future. Thus all other alternatives experience a sharp drop in HCNRA CMP-related expenditures in the second decade.

In all land allocations, costs increase as timber targets increase. These increased costs are not matched by increased benefits; the net effect being that net cash flow decreases. Extra costs resulting from the timber targets largely take the form of increased planting, increased thinning, road and logging costs.

Benefits: Market Values and Assigned Values

Some Forest outputs, such as stumpage, are normally traded in the market place and have market values. Others, such as hiking, are not bought or sold, and therefore have been assigned values. The fact that one is not exchanged in the marketplace does not make it valueless. Table II-6d displays total Forest benefits by these categories. The most noticeable feature portrayed there is that while total market resource values vary substantially between the alternatives--by as much as 64 percent; total nonmarket resource values vary hardly at all--with a maximum variation of five percent. The wide range of variability in market values is caused predominantly by timber harvest levels which can be changed markedly. Changes in recreation, water, and other nonmarket valued resources are quite small.

Nonmarket resource values change little because Forest Plan alternatives do not change the Forest character to the extent that marked shifts in recreation are expected. For instance, all the Forest Plan alternatives call for protection, maintenance, and expansion of developed recreation sites so that no variation in developed recreation site use is attributed to any alternative. Some Forest dispersed recreation use is expected to shift between Recreation Opportunity Spectrum (ROS) classes--from semiprimitive motorized to roaded natural, for instance--but that recreation use change is not expected to change the total recreation use. Overall, these changes will occur gradually over a span of decades that will slowly change the recreationists' perceptions of the Forest's recreation opportunities. During this timespan other Forests and other lands will be changing, along with society as a whole.

The one recreation category identified as changing between alternatives is that associated with big-game hunting outside wilderness. It is expected that big-game numbers and associated big-game hunting will vary with changes in dispersion of thermal cover, hiding cover, and open roads. These factors are affected by where and when timber is logged, how rapidly the lands are reforested, and how the timber is accessed. Maximum variation between the most widely divergent alternatives amounts to 8 percent in decade one and increases to 15 percent by decade five. Generally the Forest alternatives are arrayed with Alternative F being the best for big-game habitat and no alternative being worse than Alternative B-departure.

Incremental Differences in Economic Efficiency Criteria

Differences in economic efficiency are displayed in Tables II-4, II-5, II-7, and II-8. Table II-9 disaggregates Forest capital investments from operational and maintenance costs. The Maximum PNV benchmark is the starting point for the review. It provides a reference point as the benchmark which most closely approximates an alternative. Alternative G generated the highest present net value of any alternative because of few constraints on timber production; because it continued livestock grazing at recent historical levels; and because it was not required to harvest uneconomical timber stands. It forms the true base of comparison for the alternatives because it is a fully implementable alternative.

Moving from Alternative G to Alternative B entails loss of some $22 million in present net value. The increase in discounted costs ($80 million) exceeded the increase in discounted benefits ($58 million). Significant benefit increases occurred in timber ($49 million) and range ($5 million) outputs. The range improvements necessary to accommodate livestock at Alternative B's levels were more economically efficient than remaining at recent historical levels but this small increase in present net value was overshadowed by increased costs in the Timber (plus $42 million), roads (plus $27 million), and other programs (plus $6 million). The benefit cost ratio declined from Alternative G's 2.55 to Alternative B's 2.26.

The reason Alternative B has a lower present net value and a lower benefit cost ratio than Alternative G is that Alternative B offers more timber than is economically efficient. This is reflected in a higher incidence of lodgepole pine sawtimber logging and also a higher incidence of logging in the first decade on shortspan, longspan and helicopter lands. The timber harvest floors were established to make the alternative more responsive to the timber issue than Alternative G.

Selecting Alternative H rather than Alternative B would mean moving to a different land allocation--one significantly more attuned to amenities. This would mean picking up some benefits in recreation ($6 million) due to increased big-game numbers; making a very small reduction in range benefits (minus $1 million) and a large reduction of $76 million in timber benefits. The reductions in costs associated with the timber program (minus $31 million) and timber-related activities in roads (minus $25 million) and other programs (minus $6 million) were not sufficient to overcome the losses in benefits. The differences between Alternatives B and H are quite small in present net value terms and Alternative H returns more per dollar invested than does Alternative B (2.43 compared to Alternative B's 2.26).

Table II-6d
UNDISCOUNTED AVERAGE ANNUAL FIRST DECADE ECONOMIC BENEFITS FOR BOTH MARKET AND NONMARKET RESOURCES
1982 MILLION DOLLARS
(Ranked in Order of Decreasing Present Net Value)

Alternative	G	B	H	E	C	D	C-dep	F	A 1/	B-dep 2/
Present Net Value	651	629	620	606	598.2	598.1	586	574	556	468
Average Annual Market Resource 3/ Values, Undiscounted, for the First Decade	16.9	19.7	15.7	17.9	17.3	18.2	20.2	12.1	16.6	16.3
Average Annual Non-Market Resource 4/ Values, Undiscounted, for the First Decade	19.7	19.7	19.8	19.7	19.8	19.7	20.4	20.0	19.8	19.4
Total Average Annual Undiscounted Resource Values, for the First Decade	36.6	39.4	35.5	37.6	37.1	37.9	40.6	32.1	36.4	35.7

1/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ High bid stumpage values, grazing receipts, anadromous fish, and miscellaneous receipts.

4/ Recreation and water.

Logic would indicate that had both of these alternatives been run with identical timber targets (in terms of percent of alternative-respective maximum possible first-decade offerings) that the spread in PNV between the two would widen appreciably. Alternative B's timber target was 85 percent of its maximum possible first-decade offering, while Alternative H (with a more restrictive land allocation) was assigned a target of 80 percent. Alternative H's less intensive range program offers no advantage over Alternative B's in terms of present net value though it would look attractive in times of austere budgets. Alternative H increases recreation-related benefits and decreases recreation-related costs relative to Alternative B by spreading out some of the program's investments over time.

Alternative E has, in the balance, a less restrictive land allocation than does Alternative H. It is able to generate a higher level of timber than does Alternative C, with the same 90 percent of maximum possible timber production target, and generate a higher present net value. It ranks lower than Alternative H, which shares Alternative C's land allocations, because Alternative H's timber target was only 80 percent of its maximum possible for the first decade.

Alternative E's reduction in present net value of $14 million occurs because its $30 million increase in benefits causes an increase in costs of $45 million. Thus, while timber ($32 million) and Recreation ($1 million) benefits increased; range (minus $5 million) and other programs (minus $2 million) decreased. The small reductions in range costs (minus $2 million) were offset by increased costs in timber ($26 million), roads ($16 million), and other programs ($2 million).

Next in line in terms of overall efficiency is Alternative C with a present net value reduction of $8 million, though its benefit cost ratio remains the same at 2.26. Costs fall by some $4 million; the benefits fall even farther, by $11 million. The reduction in benefits comes about exclusively from a lower value of timber offerings (minus $18 million) along with a slight reduction (minus $1 million) in recreation activity. These reductions were offset to some extent by increased range benefits ($5 million) and increased benefits from other programs ($2 million). Cost reductions in timber of $6 million were offset to an extent by increases in range program costs ($2 million).

Alternative D's present net value is less than one-tenth of one percent lower than that of Alternative C. Its costs and benefits both increase by $18 million and its benefit cost ratio declines. Significant increases in timber harvest benefits ($22 million) and a small increase in range benefits ($1 million) are offset somewhat by reduced recreation benefits (minus $4 million) and other program benefits (minus $1 million). A small reduction in costs for recreation (minus $2 million) is overshadowed by cost increases in timber ($10 million), roads (plus $7 million), range (plus $1 million), and other programs ($2 million).

Table II-7
NONCASH BENEFITS FOR DECADES 1, 2, 5 AND 6
1982 MILLION DOLLARS
(Ranked In Order Of Decreasing Present Net Value)

Alternative	G	B	H	E	C	D	C-dep	F	A 1/	B-dep 2/
Present Net Value	651	629	620	606	598.2	598.1	586	574	556	468
Decade 1										
Willingness-To-Pay Values for Forest Outputs 3/	36.6	39.4	34.4	37.6	37.1	37.9	40.6	32.1	36.4	35.7
Forest Receipts 4/	13.6	15.5	12.1	13.9	12.8	13.7	14.3	8.8	12.0	10.3
Noncash Benefits 5/	23.0	23.9	22.3	23.7	24.3	24.2	26.3	23.3	24.4	25.4
Jobs/Year	3,381	3,757	3,339	3,590	3,580	3,657	3,991	3,064	3,526	3,995
Personal Income (Million $/Year)	53.8	56.7	53.0	58.0	57.7	59.2	66.0	47.5	56.7	66.2
Decade 2										
Willingness-To-Pay Values for Forest Outputs 3/	40.9	42.8	39.1	41.3	39.9	40.9	38.0	36.7	39.4	45.7
Forest Receipts 4/	14.7	16.3	12.6	14.9	13.4	14.1	11.8	9.6	12.4	18.0
Noncash Benefits 5/	26.2	26.5	26.5	26.4	26.5	26.8	26.2	27.1	27.0	27.7
Decade 5										
Willingness-To-Pay Values for Forest Outputs 3/	51.9	53.5	50.9	47.7	48.1	48.1	47.6	50.1	42.1	39.5
Forest Receipts 4/	18.9	19.3	16.9	14.0	13.8	13.8	13.5	16.0	7.9	0.8
Noncash Benefits 5/	33.0	34.2	34.0	33.7	34.3	34.3	34.1	34.1	34.2	38.7
Decade 6										
Willingness-To-Pay Values for Forest Outputs 3/	50.5	51.2	49.4	48.5	49.6	48.6	48.0	51.4	47.7	44.8
Forest Receipts 4/	17.0	17.6	15.8	15.4	15.9	15.3	14.3	17.6	14.5	11.5
Noncash Benefits 5/	33.5	33.6	33.6	33.1	33.7	33.3	33.7	33.8	33.2	33.3

1/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

3/ Undiscounted benefits from all Forest outputs quantified including those in 4/ below as well as benefits accruing from recreation, water, and anadromous fish.

4/ Statistical high bid stumpage values, grazing receipts, and miscellaneous receipts.

5/ Noncash benefits are not collected as fees because of current laws and policies.

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Table II-8
PRESENT NET VALUE OF ALTERNATIVES AND RELATED ECONOMIC CRITERIA
1982 MILLION DOLLARS
4% DISCOUNT RATE FOR 150 YEARS
(Ranked in Order of Decreasing Present Net Value)

		ALTERNATIVE									
	Max PNV Benchmark	G	B	H	E	C	D	C-dep	F	A 1/	B-dep 2/
Present Value of Benefits	1,102	1,072	1,130	1,054	1,084	1,073.2	1,090.7	1,086	983	1,031	1,094
Present Value of Costs	433	421	501	434	479	475.0	492.6	500	409	476	626
Present Net Value	669	651	629	620	606	598.2	598.1	586	574	556	468

1/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

Table II-9
UNDISCOUNTED AVERAGE ANNUAL FIRST DECADE COSTS BY ALTERNATIVE
1982 MILLION DOLLARS
(May Not Sum Due to Rounding)

Alternatives	G	B	H	E	C	D	C-dep	F	A 1/	B-dep 2/
Present Net Value	651	629	620	606	598.2	598.1	586	574	556	468
Operational and Maintenance Costs	9.9	11.2	9.9	10.7	10.5	10.9	12.1	9.2	10.5	12.1
Capital Investment Costs	8.5	11.1	9.0	10.8	11.1	11.1	13.7	8.8	10.3	15.9
Total Budget Costs Historical Budget Level FY 1980-1983 Averaged $23.1 Million	18.4	22.3	18.9	21.4	21.7	22.0	25.8	18.0	20.7	27.9

1/ Alternative A cannot be implemented without change to existing Federal legislation. It does not meet minimum management requirements for wildlife.

2/ Alternative B-dep cannot be implemented without change to Federal legislation. It violates NFMA requirements that stands shall generally have achieved culmination of mean annual increment (CMAI) before harvesting.

Alternative C-departure generates a lower present net value than does Alternative D because it has a higher timber target and thus forces the model to schedule timber management in a less economical manner. These timber targets cause a $12 million reduction in present net value--the result of a $5 million decrease in benefits and a $7 million increase in costs.

As shown in Table II-8, this is the only instance in which a successively ranked alternative manages to both decrease benefits and increase costs. The situation arises because, with its restrictive land allocations and high first-decade timber harvests, the model is forced to harvest much more lodgepole sawtimber in the first decade (8.8 MMCF compared to 6.8 MMCF) and also to move heavily into difficult-to-log lands even in the first decade--harvesting about 8,000 acres of shortspan cable area compared to Alternative D's 5,000 acres and harvesting twice as much helicopter-longspan acreage.

Alternative F provides the sharpest drop in timber benefits between any successively ranked alternatives (minus $99 million). Range benefits are also reduced (minus $9 million) as are other programs (minus $2 million) but recreation benefits increase $8 million. Several cost reductions contribute to the total $91 million cost reduction: timber (minus $36 million), roads (minus $40 million), range (minus $5 million), and other programs (minus $10 million). The primary reason for the decline in overall present net value is that this land allocation is the most restrictive in terms of timber harvesting. This coupled with a high timber target (90 percent of its maximum possible for the first decade on a nondeclining flow basis), generates the lower present net value.

Alternative A has the highest nondeparture first-decade timber target expressed as a percentage of its maximum possible first-decade offerings--99 percent. This target was assigned to enable the alternative to approximate both the existing land allocation and recent historical timber offerings. Coupled with the second most restrictive land allocation, this resulted in the lowest present net value generated for any nondeparture alternative ($556 million). This was the net result of the $48 million increase in benefits being overshadowed by a $67 million increase in costs. The benefits were the net result of a $56 million increase in timber, an $8 million decrease in recreation, a $5 million increase in range, and a $5 million reduction in other programs.

The largest incremental increase in discounted economic costs (plus $150 million) and the sharpest falldown in incremental present net value (minus $88 million) are recorded by Alternative B departure. It also has the largest incremental increase in discounted economic benefits (plus $63 million). Benefits increase in other programs by $7 million but this is largely the result of budget constraint-induced reductions in Alternative A, the basis for comparison. Range, at its highest permitted levels, increases those benefits by $5 million. The timber program increased its benefits by $66 million, the result of operating with the least constrained land allocation. Recreation benefits fall by $15 million to their lowest levels because this alternative is the most disruptive to big-game habitat. Predictably, the only cost center which declines is that for recreation (down $3 million) while timber increases $56 million, roads $74 million, range $2 million, and other programs $11 million.

The alternatives are arrayed in order of increasing discounted costs in Table II-10.

Implications of FORPLAN Runs on Current Management Direction

One implication is that the Forest is harvesting timber at rates in excess of those which economic efficiency would indicate. Whereas recent annual offering levels for sawtimber on the Forest have been at 159 MMBF, FORPLAN scheduled 139 MMBF, even when directed to harvest timber at levels in excess of those indicated by economic efficiency criteria. Another observation is that the Forest has moved into more costly logging systems more rapidly than efficiency would indicate. The analysis for this plan indicates that a higher level of economic efficiency would have been achieved had the Forest managed its easily-logged, high-valued stands more intensively rather than moving so quickly into the more difficult-to-log stands.

Other salient features revealed in the analysis include projections of sizeable increases in precommercial thinning (rising especially from the clearcuts of dead and dying lodgepole pine); the increased use of regeneration harvests rather than partial harvests; the reduced incidence of planting as a means to achieve regeneration; the reduction to insignificant levels of the incidence of commercial thinning on regenerated stands; and acceptance of regeneration lags well in excess of five years.

Resource Supply and Demand Projections

This section summarizes anticipated supply and demand conditions for Forest goods and services for the RPA time period. The great bulk of the Forest outputs and activities identified in the RPA program are intermediate in nature--they do not represent final outputs. To speak of supply-demand relationships for precommercial thinning or miles of road constructed, for instance, would be inappropriate. The appropriate consideration in the former case is sawtimber production, in the latter instant, roaded versus nonroaded recreation. Precommercial thinning, road construction, local area impacts, and so on, are effects and are, therefore, not discussed here. As used in this section of the document, "demand" is used to identify a particular point or instant on a demand schedule. As such, it reflects an intersection at a particular point in time between a demand schedule (a list of willingness-to-pay values for various levels of offerings) and a supply schedule (a list of volumes the seller is willing-to-offer at various prices).

Table II-11 depicts those intersection points over time for those Forest outputs for which such a display is meaningful. As such, they assume a continuation into the future of those factors which would provide viability for the respective enterprises. In the case of livestock grazing, for

Table II-10
ALTERNATIVES ARRAYED IN ORDER OF INCREASING DISCOUNTED COSTS 1982 MILLION DOLLARS
4% DISCOUNT RATE FOR 150 YEARS

Alternatives	F	G	H	C	A	E	D	C-dep	B	B-dep
Discounted Costs (Present Value of Costs)	409	421	434	475.0	476	479	492.6	500	501	626
Incremented Discount Cost From Next Lower Alternative		+12	+13	+41	+1	+3	+13.6	+7.4	+1	+125
Discounted Benefits	983	1,072	1,054	1,073.2	1,031	1,084	1,090.7	1,086	1,130	1,094
Incremented Discount Benefits From Next Lower Alternative		+89	-182	+19.2	-42.2	+53	+6.7	-4.7	+44	-36
Present Net Value	574	651	620	598.2	556	606	598.1	586	629	468
Incremental Change In Present Net Value From Next Lower Alternative		+77	-31	-21.8	-42.2	+50	-7.9	-12.1	+43	-161

instance, the figures assume continued population growth in the United States, a certain level of red meat consumption per capita, certain levels of imports and exports, certain cost levels for the goods and services used in the production of red meat, and so on. The projections, like any projections, are therefore expected to be less accurate in the distant future than in the near future.

Table II-11
SUMMARY OF PROJECTED SUPPLY AND ANTICIPATED DEMAND

	1986 - 1990	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030
Recreation					
Developed Recreation					
Including Visitor Information Service (MRVD's)					
Projected Supply					
Current Direction	587	595	603	610	618
Maximum Developed Recreation 1/	661	661	661	661	661
Forest Plan	661	661	661	661	661
Anticipated Demand 2/	399	464	523	572	635
Dispersed Recreation Including Wildlife and Fish Use (MRVD's)					
Projected Supply					
Current Direction	7,104	7,417	7,658	7,658	7,658
Maximum Dispersed Recreation 3/	7,149	7,533	7,810	7,810	7,810
Forest Plan	7,034	7,222	7,342	7,342	7,342
Anticipated Demand 2/	1,337	1,472	1,698	1,898	2,033
Projected Supply of Roaded Recreation 4/					
Current Direction	5,904	6,388	6,748	6,748	6,748
Maximum Roaded Recreation 3/	5,904	6,567	6,996	6,996	6,996
Forest Plan	5,831	6,199	6,444	6,444	6,444
Anticipated Demand 2/	742	811	1,002	1,165	1,261
Projected Supply of Nonroaded Recreation 4/					
Current Direction	1,200	1,029	910	910	910
Maximum Nonroaded Recreation 5/	1,227	1,112	1,035	1,035	1,035
Forest Plan	1,203	1,023	898	898	898
Anticipated Demand 2/	595	661	696	733	772
Timber					
Sawtimber (MMBF)					
Projected Supply					
Current Direction	139	142	151	133	139
Maximum Timber Benchmark	193	192	189	189	185
Forest Plan	143	137	156	140	137
Anticipated Demand 6/	250	250	250	250	250
Roundwood (MMCF)					
Projected Supply					
Current Direction	7.8	6.5	5.2	5.2	5.2
Maximum Timber Benchmark	10.9	9.1	7.2	7.2	7.2
Forest Plan	7.8	6.5	5.2	5.2	5.2
Anticipated Demand 7/	12	12	12	12	12
Livestock Grazing (MAUM's)					
Projected Supply					
Current Direction	186	186	186	186	186
Maximum Livestock Benchmark	227	227	227	227	227
Forest Plan	207	207	207	207	207
Anticipated Demand	227	227	227	227	227

1/ All alternatives except A, which is a budget-constrained alternative.

2/ Based on recent historical experience, OBERS population projections for the State of Oregon, and Forest recreational opportunities.

3/ Alternative B.

4/ Inclusive of WFUD's and recreational experience occurring in wilderness.

5/ Alternative E.

6/ Based on mill capacity depicted on pp. 25 and 53 of James O. Howard's Oregon's Forest Products Industry: 1982, Resource Bulletin PNW-118, October 1984; USDA Forest Service. Projections of demand entail projections of a myriad of interconnected factors--some of which can reasonably be estimated (population, for instance) and some of which cannot (technological breakthrough, shifts in appraisal methods, etc.). It is reasonable to assume that installed mill capacity could be maintained for 2 decades, and that mill capacity beyond that time would be sufficient to process Forest offerings.

7/ Anticipated demand levels are basically an expression of mill capacity continued into the future. Arguments might be made that population pressures would tend to increase overall National demand, assuming a relatively stable price structures. No increase was shown however because of the opportunities available to substitute other products for wood and because, as an expression of local demand, expanded mill capacity would be contrary logic when raw material supply levels are not expected to increase.

Chapter III

AFFECTED ENVIRONMENT

OVERVIEW

The purpose of this chapter is to describe the environment which may be affected or changed as a result of implementing the proposed Forest Plan or its alternatives. Although most of the discussion focuses on National Forest lands and resources, in some instances the off-Forest environment is also pertinent and, therefore, is described. Also described are interrelationships between resources where they are significant to the decisions being made.

Location

There are 2.6 million acres within the boundaries of the Forest. Included are the Wallowa and the Whitman National Forests in Oregon and portions of the Nezperce and Payette National Forests in Idaho. Of that total, 2.3 million acres are National Forest System lands. Interspersed within the administrative area of the Forest are various other Federal, State, county, and private land parcels. The Forest is in the northeast corner of Oregon and the west central edge of Idaho as shown on the vicinity map (Figure III-1). It lies within Wallowa, Union, Baker, Malheur, Umatilla, and Grant Counties in Oregon, and Idaho, Adams, and Nez Perce Counties in Idaho. The Forest Supervisor's Office is in Baker, Oregon.

District offices for the six Ranger Districts and the Hells Canyon National Recreation Area (HCNRA) are located in the Oregon towns of Baker, Joseph, Enterprise, La Grande, Halfway, and Unity. Offices for the HCNRA are also in Lewiston and Riggins, Idaho. The Wallowa-Whitman has responsibility for administering the HCNRA with the exception of the wild river segment of the Rapid River. Administration of this portion of the HCNRA is divided between the Nezperce and Payette National Forests with headquarters in Grangeville, Idaho and McCall, Idaho, respectively.

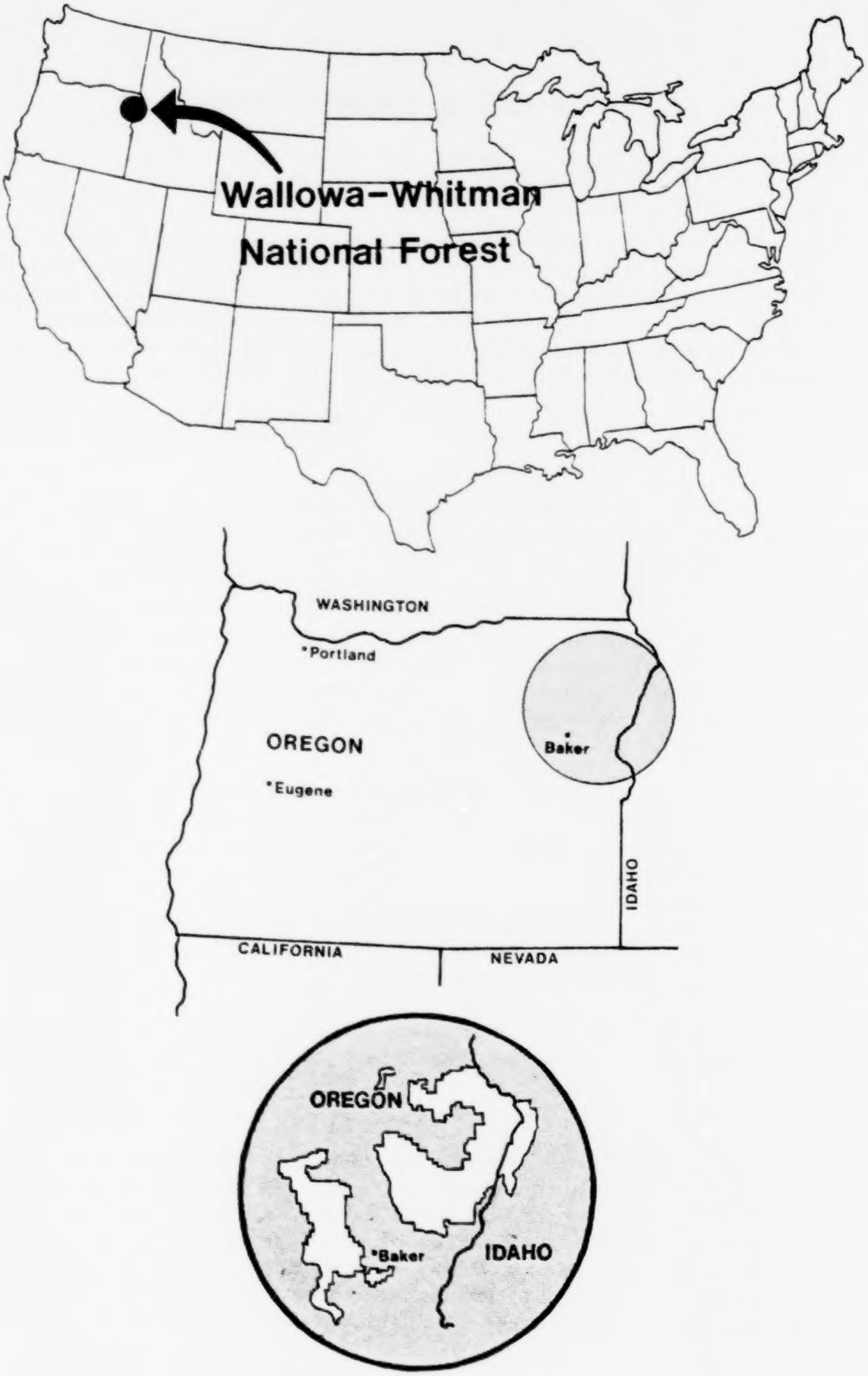
The acreages of National Forest System lands by county, administered by the Wallowa-Whitman National Forest Supervisor, are shown in Table III-1.

Topography

The Forest includes all or portions of three distinct mountain ranges: the Blue Mountains (including the Elkhorn Range) and the Wallowa Mountains in Oregon, and the Seven Devils Mountains in Idaho. South and west of Baker and extending northerly past La Grande, the Blue Mountains provide high ridges with alpine meadows and dense timber, interrupted by the broad prairie valleys of the Burnt, Powder and Grande Ronde Rivers. The Wallowa Mountains are a range of jagged mountain peaks with alpine meadows and dense

Figure III-1

VICINITY MAP


Wallowa-Whitman National Forest
WASHINGTON
Portland
OREGON
Baker
Eugene
IDAHO
CALIFORNIA
NEVADA
OREGON
Baker
IDAHO

timber, giving way to Pine Valley on the south, Baker and Grande Ronde Valleys on the west, the Wallowa Valley on the north, and dropping sharply into the Snake River to the east. The Seven Devils Mountains of Idaho are located to the east of the Snake River, rising to provide alpine conditions similar to those in the Wallowa Mountains.

Table III-1
NATIONAL FOREST SYSTEM LANDS

Oregon Counties		Idaho Counties *	
Baker	595,110 acres	Adams	24,638 acres
Grant	82,782	Idaho	112,278
Malheur	3,460		
Umatilla	25,586		
Union	515,320		
Wallowa	990,071		

* Does not include 8,288 acres in the Rapid River portion of the Hells Canyon National Recreation Area administered by Nezperce and Payette National Forests.

Elevations vary from 860 feet where the Snake River leaves the HCNRA to nearly 10,000 feet for several peaks in the Wallowa and Seven Devils Mountains. Elevations of several mountain peaks on the Elkhorn Ridge approach 9,000 feet.

Climate

The climate is typical of the northern intermountain portion of the United States with cold moist winters and hot dry summers. Average annual precipitation increases as elevation increases with less than ten inches occurring in lower valleys and as much as 80 inches occurring in the highest portion of the Wallowa Mountains. In most years, 70 percent of the annual precipitation occurs in the form of snow during the November-April period.

The area experiences wide temperature extremes with summer temperatures at lower elevations commonly exceeding 100 degrees Fahrenheit and winter temperatures at higher elevations commonly below zero.

Soils

Forest soils reflect variations in climate, topography, parent materials, vegetation and the length of time the soils have been developing. Since most of the soils on the Forest have been influenced by volcanic ash, fine to medium textured surface soils dominate. Subsoils are developed from volcanic rock, sediments, and metamorphosed materials and have very fine to fine textures. Areas of coarse textured soils derived from granodiorite are found in the central Wallowa Mountains, along Elkhorn Ridge and in the Seven

Devils in Idaho. The southern portion of the Forest contains fine textured soils derived from pyroclastic rocks and sedimentary formations. Numerous localized inclusions and variations in geology and soil types occur across the Forest.

Volcanic ash, deposited across the Forest as a result of ancient volcanic eruptions on Mount Mazama and Glacier Peak, still influences soils on about 60 percent of the Forest. This ash, which is capable of absorbing and holding large quantities of water, substantially increases timber and forage productivity on most sites where it is found (Geist, 1978).

As required by the National Forest Management Act implementing regulations, lands suited for timber management have been identified during the development of this environmental statement (36 CFR 219.14). Approximately 90,000 acres of forested land were found to be unsuited for timber management, including some 9,860 acres which were determined to be unsuited because of slope instability. These unstable areas typically have steep slopes made up of soft unstable materials and exhibit signs of mass soil movement. The remaining area was determined to be unsuited because of likely difficulty in achieving reforestation. In almost all instances, this condition is a result of shallow rocky soils, where the capacity of the soil to hold water is insufficient to support new trees through the dry summers often experienced on the Forest. (For additional description of this process see Chapter III, Timber and Appendix E.)

Many forest activities can affect soils. Timber harvesting, livestock grazing, and off-road vehicle use can remove the soil's protective cover of vegetation and permit soil erosion. These same activities can also compact the soil, reducing its long-term productivity. Road and trail construction dedicate lands to uses which prevent the soil from producing vegetation at its potential level. In some instances soil erosion and compaction can result from recreation use (particularly within developed recreation sites) and use by wildlife.

Fire, if hot enough, can significantly affect soils by permitting erosion, destroying nutrients and organic matter in the surface layer, and reducing wettability (the ability of the soil to absorb rain or snowmelt).

Management of the soil resource as a part of overall forest management is in a state of change. Traditionally, soil management efforts have concentrated on reducing soil losses due to erosion. Strides have been made in controlling losses following timber harvest activities and in reducing erosion from rangelands; however, areas with accelerated erosion persist. Research now indicates that changes in soil structure, particularly those associated with soil compaction, can have long-term effects on productivity (Froehlich 1979). This may occur even though soil loss from the site does not occur. Recent efforts on the Forest have been directed toward reducing and mitigating damage to soil structure through improved timber harvest techniques. In some instances this has included subsoiling previously damaged soils.

The Forest is correcting known watershed problems as opportunities to do so arise. In recent years, little direct funding for watershed improvment has been available and this type of improvement work has averaged only five acres per year. Often, watershed improvements are made in concert with other activities occurring in the area, such as timber sales.

Some 48,000 acres of the Forest are estimated to be in a compacted condition or having accelerated soil erosion. Activities to correct these problems may include erosion control through grass seeding or other means, stabilization of channels, gulleys, and streambanks through the use of structures or establishment of vegetation; obliteration and rehabilitation of unneeded roads or wheel tracks; and subsoiling of compacted soils.

Fertilizers are used to speed the recovery of disturbed soil areas where the topsoil has been lost or displaced, such as cutslopes and fillslopes along roads, or on depleted ranges. To date, little research has been done on the possible improvements in productivity of Forest soils which could be realized through broadcast application of fertilizers on forest or rangelands.

Minerals

The Forest is in the heart of the most productive gold and silver region in the State of Oregon and has the highest level of mineralization of any Forest in the Pacific Northwest Region. Other metals including copper, lead, zinc, chrome, mercury, and antimony have also been produced in the Forest vicinity. Both lode and placer mines have made substantial contributions to total production figures. At recent (1983) prices, northeastern Oregon's historical metal production would be worth nearly $1.5 billion. Historical metal production from the vicinity of the Forest would be worth nearly $800 million.

Although mineralization occurs in numerous areas across the Forest, some areas have a higher potential for mineral occurrence than others. Areas on the Forest have been classified according to their mineral potential and likelihood of near-term development, with classes ranging from I-High to V-Low or Unknown. (See Table III-2 for a description of the various categories.)

Table III-3 is a list of mineralized areas on the Forest. Their locations (by number) are shown in Figure III-2. A more detailed description of each can be found in Appendix J.

The Forest has not historically been considered favorable for oil and gas exploration. Only recently has there been interest in obtaining leases in the vicinity. Recently, leases and lease applications covered a significant part of the Forest, including land outside the area considered favorable by the U. S. Geological Survey (see Figure III-3). However, interest in obtaining oil and gas leases has waned considerably, many applications have been withdrawn, and most leases were terminated after one year.

A new, possibly extensive, lignite coal field has been found near the communities of Flora and Paradise in northern Wallowa County. Most of the coal-bearing strata have been found outside the National Forest. A large program of exploratory drilling, sampling, analysis, and geologic mapping is necessary before any assessment can be made as to the feasibility of extracting the coal. Given a marketable deposit, many environmental concerns, including aquifer disruption and loss of topsoil productivity, would still have to be addressed.

Table III-2
CATEGORY DEFINITIONS FOR LOCATABLE MINERALS

CATEGORY	I	II	III	IV	V*
1. Potential for substantial development/ production within ten years	High	Moderately high	Moderate	Low	Very low based on current knowledge.
2. Current Activity level	Production or development in progress or pending investment decision.	Comprehensive exploration, development likely. May include some small scale production.	Exploration programs which may include sampling, geochemical and geophysical surveys, geologic mapping, reconnaissance drilling. May include some hobby-size producers.	Sporadic exploration with occasional isolated intense programs by companies or prospectors.	Occasional interest by prospectors.
3. Land Position	Long-term maintenance of claims by established mineral companies/ individuals.	Long-term.	Intermittent by established mineral companies/individuals, long-term by prospectors.	Short-term by established companies/ individuals. Intermittent by prospectors.	Sporadic.
4. Geology	Known and favorable for development of significant ore deposits.	Known and considered favorable from comparison with other producing districts.	Not well known, but appears to have favorable characteristics.	Not well known, some favorable characteristics.	Either unknown or unfavorable.
5. Reserve/Resource	Ore reserves established. Will sustain significant production.	Presence of, or strong potential for, substantial resource. May include small reserves.	Potential for large resource is unknown. Small resources, possibly some very small pockets of reserves.	Some mineral occurrences, but not enough information to establish resources.	Unknown.

* Includes all areas not in other categories.

Table III-3
MINERALIZED AREAS

	Name	Map Reference for Figure III-2
Category I	Cornucopia	8
	Homestead	6
Category II	Bourne	17
	Cable Cove	16
	Granite	15
Category III	Baker	21
	Blue Jacket	2
	Geiser	24
	Greenhorn	23
	Pine Creek	29
	Red Ledge	4
	Rock Creek	18
	Unity	31
	Upper Grande Ronde	12
Category IV	Auburn Creek	30
	Bald Dooley	28
	Beaver Creek	22
	Elkhorn	20
	Greenhorn-Whitney	25
	Homestead-Cliff Mountain	5
	Jackley Mountain	3
	Keating	10
	Kirkwood Creek	1
	Limber Jim-Meadow Creek	11
	Medical Springs	9
	Mt. Ireland	19
	Onion Creek	14
	Trail Creek	13
	Wallowa Mountains	7
	Whipple Gulch	27

Although a few hot springs are known to occur in and near the Forest, there does not presently appear to be a high potential for geothermal resource development or for recreation use. There currently are no geothermal leases or lease applications within Forest boundaries. The U.S. Geological Survey considers some lands prospectively valuable for geothermal resources in the vicinity, some of which are within the Forest boundaries. See Figure III-3.

Figure III - 2

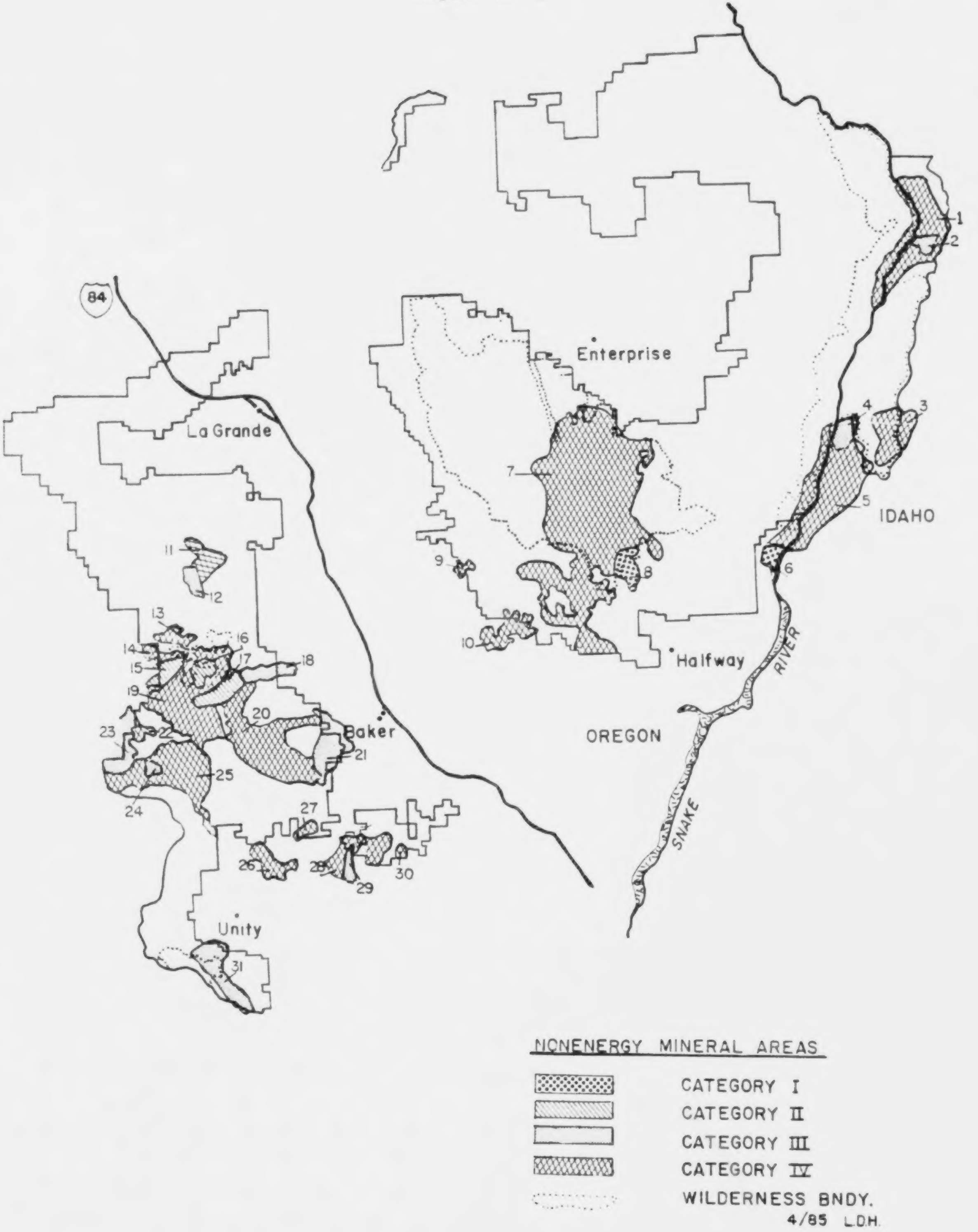
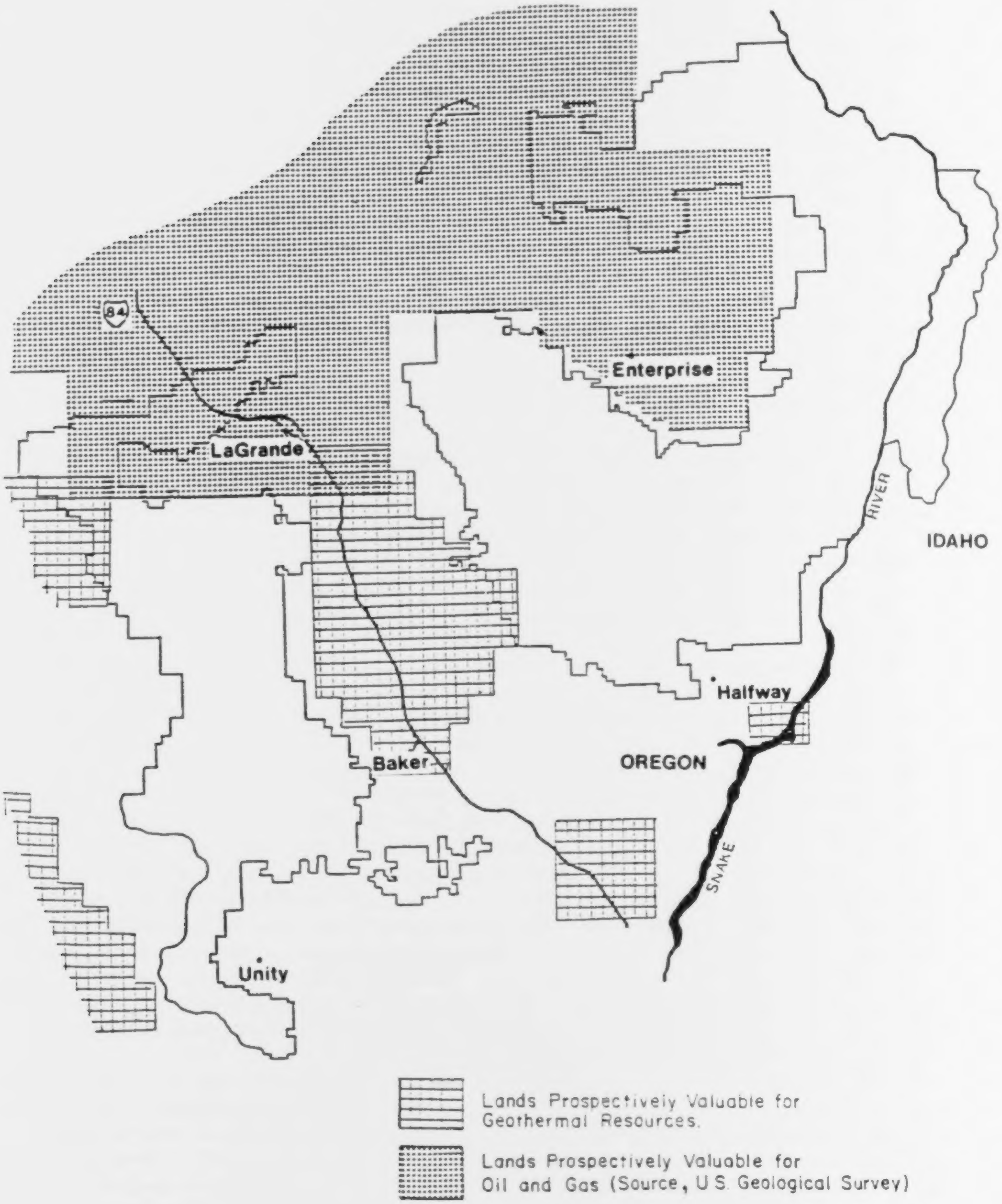

84
La Grande
Enterprise
Halfway
Baker
Unity
OREGON
IDAHO
SNAKE
RIVER
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
NONENERGY MINERAL AREAS
CATEGORY I
CATEGORY II
CATEGORY III
CATEGORY IV
WILDERNESS BNDY.
4/85 LDH

Figure III - 3

LANDS PROSPECTIVELY VALUABLE FOR GEOTHERMAL, OIL, AND GAS RESOURCES


84
LaGrande
Enterprise
Halfway
Baker
OREGON
IDAHO
Unity
SNAKE
RIVER
Lands Prospectively Valuable for Geothermal Resources.
Lands Prospectively Valuable for Oil and Gas (Source, U.S. Geological Survey)

8/22/85 L.D.H.

Sand, gravel, crushed rock, building stone, and limestone occur within the Forest boundaries. These are all materials having low unit values which must be near transportation routes, and usually the point of consumption, to be utilized. A continuing need for some quantities of these materials can be anticipated, with increased demand during periods of growth. The region has a history of producing large amounts of cement.

Historical mining activities have heightened the concern of many Forest users over present and future mining activity. Environmental effects of past mining activities included reduced riparian condition and water quality due to placer mining in streams and other wet areas, loss of site productivity due to dredging of large acreages such as Sumpter Valley, reduced air quality and visual quality near operating sites, and increased noise.

Some of these, most notably water and air quality damage, have been reduced in more recent activities through increased control over the operations. Operators on National Forest lands are required to file an operating plan which includes environmental mitigation measures. Regardless, mining is a ground disturbing activity, not always compatible with other uses on sites where it occurs.

Air Quality

Most potential air pollution sources are off-Forest. These include such diverse sources as agricultural field burning, forest debris burning on private and other public lands, dust from agricultural lands, industrial pollution from local and distant sources, and fuelwood used for home heating.

In recent years, home heating with wood has increased significantly (see Figure III-6), noticeably increasing smoke in many local communities. Since the Forest is the major source of fuelwood locally, and contributes to fuelwood use as far away as Boise, Idaho, the availability and cost of fuelwood from the Forest may affect air pollution levels in these communities.

Forest management activities, particularly prescribed fire, can contribute significantly to short-term air quality problems. Prescribed fire on the Wallowa-Whitman currently contributes approximately 6,000 tons of particulates to the air of northeastern Oregon annually. Other activities on the Forest which can create short-term air quality problems include road construction, road use, and mining. Wildfires can also significantly reduce air quality.

The Forest lies in the Eastern Oregon Intrastate Air Quality Region, the Idaho Intrastate Air Quality Region (No. 62), and the Eastern Washington-Northern Idaho Interstate Air Quality Region (No. 63). In accordance with the Clean Air Act (P.L. 88-206) as amended, these regions are classified according to the amount of air degradation that could be permitted. The Eastern Oregon Air Quality Region has been classified Priority 2 (moderate degradation permitted) for suspended particulates and Priority 3 (fairly heavy degradation permitted) for other pollutants. The two Idaho regions are classed as Priority 1 (virtually no degradation permitted) for particulates. However, Region 62 is classed Priority 1 for other pollutants whereas Region 63 is classed as Priority 3. A further consideration is the fact that the Eagle Cap and Hells Canyon Wilderness areas have each been classified as Priority 1 for both measures, regardless of the air quality region in which they lie.

Despite the complex jurisdictions within which the Forest lies, it is unlikely that air quality will become an issue in the near future as long as laws controlling industrial activities outside the Forest are enforced. Air quality considerations are seldom critical in decision making on the Wallowa-Whitman since it is usually possible to adjust the timing of prescribed burning to assure adequate smoke dispersal.

Water

The Forest includes 130 lakes and reservoirs totalling 5,400 acres. Of these, 105 are within wilderness. Water storage within many of the wilderness lakes has been increased through the addition of dams (prior to wilderness designation). Release is controlled to provide irrigation water for off-Forest valley lands when needed. Nearly all viable reservoir sites on the Forest have been developed. There are currently 30 dams on National Forest land.

There are about 9,600 miles of streams on the Forest. Of these, 730 miles are Class I streams. Class I streams are intermittent or perennial streams which are a direct source for domestic use, are used by large numbers of fish for spawning, rearing, or migration, or flow enough water to be a major contributor to a Class I stream. There are 570 miles of Class II streams. These are perennial or intermittent streams which are used by significant numbers of fish, or are major contributors to other Class II streams. Other perennial streams (Class III) total 900 miles. These flow yearlong, but do not contain significant numbers of fish. The remaining 7,400 miles are intermittent streams which do not contain significant numbers of fish at any time during the year.

Total water production from the National Forest averages some 2.73 million acre feet annually. While Forest lands comprise only 40 percent of the total land base in the area, they provide some 80 percent of the annual water runoff. Streamflow varies substantially by season, with some 6 percent of the total annual flow occurring in the October-December period, 16 percent in the January-March period, 59 percent in the April-June period, and 19 percent occurring in July-September.

Major uses of water from National Forest lands include irrigation, municipal and other domestic, industrial, power, mining, fisheries, and recreation. Irrigation is by far the dominant consumptive use, with total water rights exceeding 2.2 million acre feet. Water rights for municipal, domestic, and industrial use total some 390 thousand acre feet.

All major drainages are currently over-appropriated. Seasonally low flows, depleted by irrigation withdrawals, are a primary cause of high stream temperatures during the summer months. This is of particular concern in anadromous fish streams where high temperatures and depleted flows may reduce fish production. Unfortunately, there is little opportunity to increase streamflows through timber management. Only short-term streamflow changes of small magnitude are expected, and these will occur in early spring when there is no shortage. Some increase in irrigated acreage is expected over the next 20 years along with gradual increases in other uses. Meeting increased water needs will require additional storage facilities, increased reliance on wells, and/or more efficient use of existing water supplies since substantial streamflow increases cannot be expected.

The Cities of Baker and La Grande have Memoranda of Agreement with the Secretary of Agriculture establishing municipal supply watersheds. Requirements of these memoranda are common to all Forest Plan alternatives. The Baker City Watershed includes 8,740 acres of National Forest land, providing water for a population near 10,000. The La Grande Municipal Watershed includes 15,631 acres on National Forest land supplying a population of over 11,000. Both cities have experienced water shortages in recent years and now rely on wells to supplement stream flows. Opportunities exist for increased supply if facilities are improved, increased storage is provided, or additional sources are tapped.

The agreement with the City of La Grande includes the following requirements:

1. That before entering into any agreement for the cutting of timber or removal of other forest products from National Forest lands within the area, the officials of the City of La Grande will be consulted and full consideration will be given to any requirements the City of La Grande may desire to impose as necessary for the safeguarding of the water supply.

2. That in permitting the use of said lands for timber cutting or other purposes, full consideration shall be given to the preservation of the volume and purity of the city water supply, and if the proper State or Federal agencies shall determine, after due study and investigation, that the city water supply is being or will be diminished, contaminated or polluted through permitted operations upon said lands, and there is no other more practicable remedy for the situation, the Secretary, so far as he has the legal authority to do so, will cause such permitted operations to be restricted, modified or discontinued.

3. Grazing of livestock on National Forest lands in the watershed will not be authorized by the Forest Service except with the consent of the officials of the City of La Grande. Any fencing or other improvements found necessary to effectively exclude livestock from the watershed or to aid in safeguarding the water supply will be constructed and maintained by the City under special use permit to be issued by the Forest Supervisor.

4. So far as practicable with the means at his disposal, the Secretary of Agriculture will extend and improve the forests upon these lands by seeding and planting, and by the most approved methods of silviculture and forest management.

5. The Forest Service will administer and protect the area in connection with adjoining National Forest lands. Should the City of La Grande desire any special measures not provided by the regular Forest Service administration, they may be obtained at the expense of the City of La Grande by the appointment of additional employees to be appointed

> by and to be directly responsible to the Forest Supervisor of the Whitman National Forest, but their compensation will be paid by the said City at the same rate as persons employed by the Forest Service on similar duties.

The agreement between the City of Baker and the Secretary of Agriculture requires that use of land within the domestic supply watershed will not be permitted without the approval of the City of Baker except for measures necessary for the proper protection and care of the forests. These measures include timber management activities which are not detrimental to the water supply, construction activities consistent with the objectives of the agreement and rights-of-way acquired under Acts of Congress.

Commercial livestock grazing is not currently permitted in either watershed, primarily due to concerns over possible bacterial pollution. Timber harvesting is permitted but little has occurred, to date.

Several other communities rely on the Forest for municipal water. Sumpter obtains its water from the McCully Fork of the Powder River, Granite from a spring located on National Forest land, and Union utilizes water from Catherine Creek. In addition, Wallowa and Joseph receive all or part of their domestic water supplies from streams originating on National Forest lands. The water supply intakes for Union, Wallowa, and Joseph are sufficiently far from the Forest boundary so that significant potential for off-Forest pollution exists.

The City of Halfway possesses a special use permit for use of Leep Springs as a domestic source, although it currently is not using this supply.

The National Forest has 1,462 identified water uses on its most recent water uses inventory. There are 27 Forest Service campgrounds and two picnic areas with piped-in water. Two uses for irrigation (pastures) have been identified. The remaining 1,431 uses are associated with stock watering. For many of these uses, application for water use must be made to the respective States. Water rights have been acquired or requested for 462 of these uses. The Forest is presently reviewing some 800 other uses to determine those which require water rights. It is estimated that eventually water rights will be needed for an additional 300-400 uses. Water for uses such as fire fighting, road construction and maintenance, or watershed protection was reserved under the Organic Administrative Act of 1897 and water rights from the States are not required.

The Forest has the opportunity to increase the quality of water flowing from National Forest land. In theory, all water flowing from the Forest could be improved to meet quality standards. In reality, there are some water quality problems, such as sediment from poorly located arterial roads, or stream temperature increases due to depleted flows which, while they may be improved, cannot practically be eliminated in the foreseeable future. The opportunity exists to improve or correct many of the water quality problems caused by cattle in riparian areas, local streambottom roads, and other areas of reduced watershed condition.

Forest fires may also reduce water quality by increasing soil erosion and reducing stream shade. Under controlled conditions (as with prescribed fire) these effects are generally negligible, but the extreme heat generated by wildfires may significantly reduce water quality for several years until vegetation returns.

Many National Forest streams are bordered by floodplains. (Maps are located at the National Forest Headquarters.) Wetlands have not been mapped on a Forest-wide basis. Policy and direction for managing floodplains and wetlands are found in Forest Service Manual 2500. Management activities are constrained to assure that wetland and floodplain values are protected, sometimes resulting in reduced timber yields, increased road construction costs, and changes in livestock management. Site specific analyses of projects or activities within, or which could affect, floodplains and wetlands are conducted through the NEPA process and according to this policy and direction.

Major flooding remains a problem only in the Grand Ronde Valley. Prior to completion of Mason Dam on the Powder River in the late 1960's, flooding was also a problem in Baker Valley. With the streamflow control provided by the dam, damage there is now limited to localized events such as ice jams which occasionally force the river out of its banks.

All significant flooding occurs off the National Forest, but much of the streamflow contributing to the floods comes from National Forest land. Flooding within the Grande Ronde Valley occurs both from the Grande Ronde River and from Catherine Creek. Major floods of record from the Grande Ronde River have all occurred when the streamflow at La Grande was above 5,000 cubic feet per second (CFS). All major floods from Catherine Creek have occurred at flows of 1,000 CFS or higher (U. S. Army Corps of Engineers 1964, 1971). Most flooding occurs on agricultural land and much stream channel work has been completed within the valley in an attempt to reduce the severity of floods in these areas.

In the late 1960's and early 1970's, plans were made by the U. S. Army Corps of Engineers to build dams both on the Grande Ronde River and on Catherine Creek to reduce flood damage within the valley. These plans, which were challenged in court because of concerns on fishery values, have since been dropped.

Although not major in nature, flooding also occurs in Wallowa Valley. This is primarily due to high flows in the Wallowa River, although flooding has also occurred along Hurricane and Bear Creeks and the Lostine River.

Flow frequencies for several streams are shown in Table III-3a.

Table III-3a
PEAK FLOW FREQUENCIES FOR SELECTED STREAMS
(cubic feet per second)

	Recurrence Interval (Years)					
Stream	2	5	10	20	50	100
Grande Ronde River at La Grande 1/	3,350	4,950	6,100	7,300	8,900 3/	10,200
Catherine Creek Near Union 2/	782	1,042	1,197	1,377	1,502	1,619
Imnaha River at Imnaha 2/	2,673	4,056	5,153	6,762	8,136	9,668
Wallowa River Above Wallowa Lake 3/	828	1,185	1,427	1,739	1,974	2,211
Hurricane Creek 2/	545	742	867	1,017	1,124	1,228
Powder River Near Baker 2/	734	1,048	1,232	1,440	1,578	1,703

1/ U. S. Army Corps of Engineers, 1964
2/ Developed from data gathered by the USDI Geological Survey
3/ Twenty-five-year frequency

Hydroelectric Facilities

Currently, there are five hydroelectric facilities on the Forest: (1) Hells Canyon Dam on the Snake River; (2) Little Sheep Creek on the Wallowa Valley Improvement Canal; (3) Pacific Power and Light Company dam on the East Fork of the Wallowa River; (4) Rock Creek Diversion and Conduit on Rock Creek; and (5) the City of Cove hydroelectric project, near the City of Cove. The generating facility for the Cove project is located off National Forest land. Approximately one mile of ditch for the project is located on the Forest.

Streams flowing from National Forest Lands supply a significant amount of water to hydroelectric projects at Brownlee Dam and Oxbow dam, which are located off-Forest, as well as to the small hydroelectric facility maintained by the City of Baker.

Table III-3b
EXISTING HYDROELECTRIC FACILITIES

Name	Watershed	Installed Capacity (MW)	Developable Potential (MW)	Average Annual Generation (MWH)
		Within National Forest Boundaries		
Hells Canyon	Snake River	391.5	0	2,995,600
Rock Creek	Rock Creek	.9	0	4,900
Sheep Creek	Sheep Creek	.1	0	4,075
Wallowa Falls	East Fork Wallowa River	1.1	0	4,835
		Outside National Forest Boundaries		
Brownlee	Snake River	585.4	0	2,417,000
Goodrich Dam	Goodrich Creek	75.0	0	650
Oxbow	Snake River	190.0	0	1,044,300

Passage of the Public Utility Regulatory Policies Act in 1978 encouraged the private development of small power projects. It requires electric utilities to connect with and purchase power from qualified small power production facilities. Current interest in small hydrolectric development is reflected in the projects which have been proposed on, and adjacent to, the Forest. Evaluation is underway for adding power generation to Mason Dam, Rock Creek, Pine Creek, and Hurricane Creek. Numerous off-Forest proposals are being evaluated for Thief Valley, Wallowa Valley and elsewhere.

A listing of potential hydropower sites is contained in Volume XXII of the Regional Assessment, National Hydrolectric Power Resources Study: Western Systems Coordinating Council prepared by the U.S. Army Corps of Engineers, September 1981.

Vegetation

Wide ranges in elevation and precipitation provide distinctly different physical environments across the Forest. These environments, in turn, are reflected in numerous vegetative types or communities. The four major physiographic units (alpine, forested uplands, grass-shrub uplands, and valley lands) are described below.

Alpine - Alpine conditions are found in three general areas of the Forest: the Elkhorn Ridge, the high Wallowas, and at the upper elevations in the Seven Devils Mountains. In general, alpine conditions are not found at elevations below 6,800 feet. These represent the highest precipitation zones on the Forest with average annual values of up to 80 inches. Rock outcrops and talus slopes, devoid of vegetation, make up much of these areas. Where soils have developed, vegetation is composed primarily of species tolerant of cold and suited to short growing seasons. Rock types include granodiorite, argillite, tuff, chert, limestone, and greenstone.

Forested Uplands - These areas make up the principal forest zone. These lands provide valuable habitat for numerous wildlife species, a wide variety of recreation opportunities, and also provide the bulk of the commercial timber coming from the area. Elevations range generally from 3,500 feet to 7,000 feet. Within this zone numerous plant communities are found. The major coniferous tree species are ponderosa pine, Douglas-fir, white fir, western larch, Engelmann spruce, lodgepole pine, and subalpine fir. Hardwood species including quaking aspen, willow, black cottonwood, and alder are also found. Mean annual precipitation varies from 15 to 40 inches, occurring mostly as snow. These areas exhibit wide variations in slope, aspect, and soil depth. Included within this zone are numerous areas which, because of shallow soils or moisture conditions, are incapable of supporting stands of trees. These lands occupy approximately 40 percent of this zone.

Grass-Shrub Uplands - The grass-shrub uplands are found in numerous areas across and adjacent to the Forest, predominantly in the transition zones between valley lands and the upland forested areas. Vegetation consists of forbs, grasses, sagebrush and other shrubs. Grasses common to this vegetation type include bluebunch wheatgrass, Idaho fescue, cheatgrass, and Sandberg bluegrass.

Grass-shrub uplands typically occur in areas of shallow soil and low precipitation (10-20 inches annually). These areas are of importance in providing forage both for domestic livestock and wildlife.

Valley Lands - Valley lands are predominantly under private or other non-Forest ownership. The three major valleys are Baker, the Grande Ronde, and Wallowa with lesser valleys including Pine, Sumpter, Keating, and Burnt River. For the most part, these are agricultural lands with good fertility.

Precipitation varies from 8 to 25 inches, frequently with little occurring during the growing season. Irrigation is used on substantial acreages within the valleys, largely alleviating this moisture shortage.

Timber Production

Of the 2.3 million acres of the Forest, approximately 46 percent, or 1.09 million acres have been identified as being tentatively suited for timber production. This means that they are capable of sustaining crops of commercial tree species, are available for timber harvest (if not allocated to some other use), that technology is available which permits harvest of timber without irreversible damage to soil productivity or watershed conditions, and that technology is available to reasonably assure reforestation. Figure III-4 shows, schematically, the process which was used to identify these lands (a detailed description is found in Appendix E). Table III-4 is a summary of this classification of forest land.

Figure III - 4

LAND SUITABILITY ANALYSIS

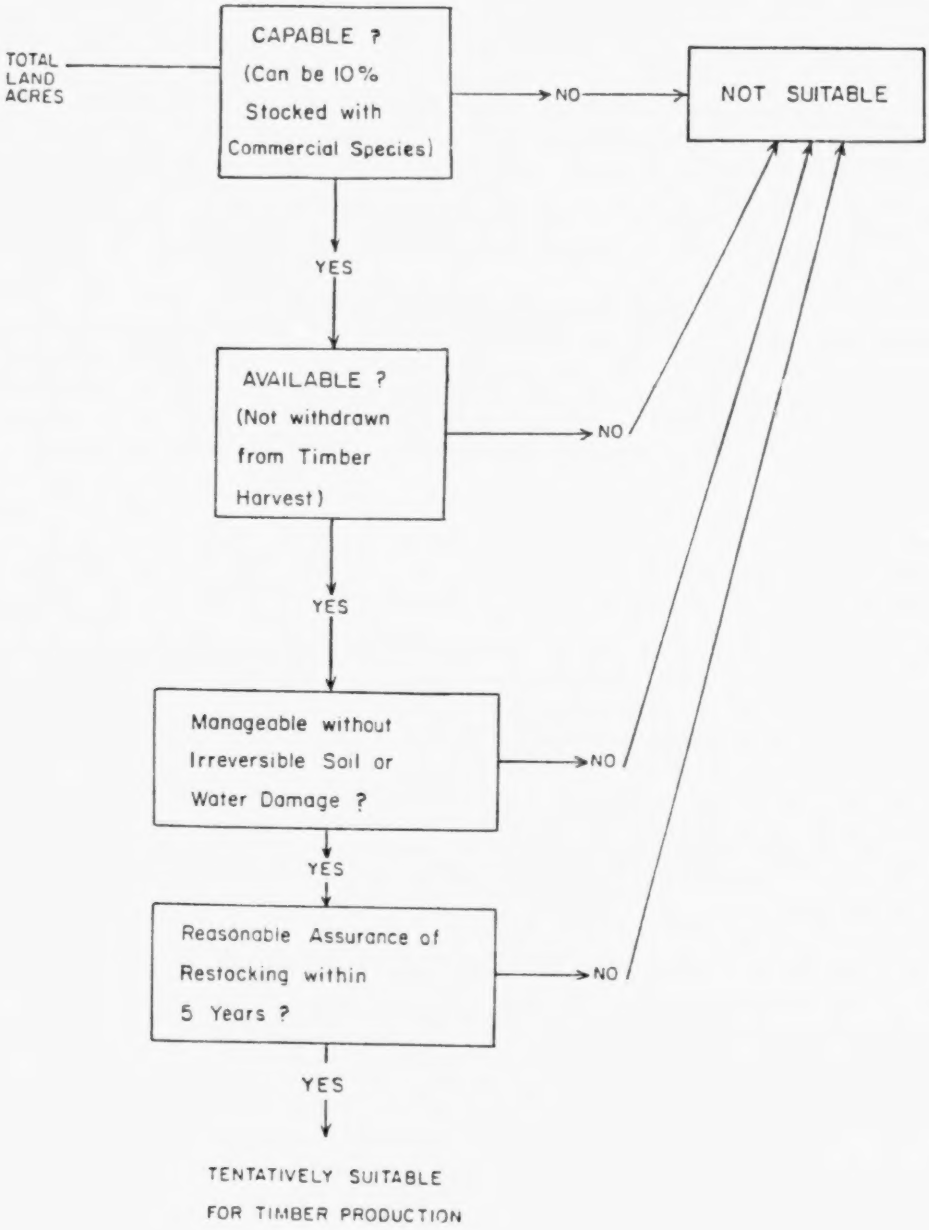

TOTAL LAND ACRES
CAPABLE ? (Can be 10% Stocked with Commercial Species)
NO
NOT SUITABLE
YES
AVAILABLE ? (Not withdrawn from Timber Harvest)
NO
YES
Manageable without Irreversible Soil or Water Damage ?
NO
YES
Reasonable Assurance of Restocking within 5 Years ?
NO
YES
TENTATIVELY SUITABLE FOR TIMBER PRODUCTION

Table III-4
LAND SUITABILITY FOR TIMBER MANAGEMENT

	Not Suited for Timber Production	Suited for Timber Production
Totals		
I. Total National Forest Area (Acres)		2,667,961
A. Other Ownerships	318,746	
II. Net National Forest Area		2,349,215
A. Water	5,386	
B. Nonforest (not stocked with 10% tree cover)	921,218	
C. Roads	10,686	
III. Forested Lands		1,411,925
A. Withdrawn From Scheduled Timber Production		
1. Wilderness		
Eagle Cap	134,900 1/ 6,113 2/	
Hells Canyon	64,504 1/ 3,679 2/	
Monument Rock	5,972 1/ 718 2/	
N. Fork John Day	11,603 1/ 3,252 2/	
2. Indian Creek Research Natural Area	876 1/ 6 2/	
3. Starkey Experimental Forest and Range		15,823
4. HCNRA "Forage" Allocation		39,620
5. HCNRA "Dispersed Recreation/ Native Vegetation" Allocation		51,690
SUBTOTAL	231,623	107,133
B. Lands Growing Less Than 20 Cubic Feet/acre/year		
1. Lands Classified as Unsuitable	12,534	
2. Lands Classified as Suitable		(347)
C. Regeneration Difficulty	67,489	
D. Irreversible Damage	9,860	
IV. Tentatively Suitable Forest Land		1,090,072
V. Totals of Suitable and Nonsuitable Lands	1,259,143	1,090,072
VI. Land Status Under Current Timber Management Plan 3/	828,500	1,395,100

1/ Lands capable of producing 20 cubic feet per acre of commercial wood fiber annually.

2/ Lands not capable of producing 20 cubic feet per acre of commercial wood fiber annually.

3/ The current Timber Management Plan does not include lands in Idaho and does not reflect the effects of P.L. 98-328 (The Oregon Wilderness Act). Acreages were determined using inventory plot-expansion techniques rather than map measurements.

Following this determination of tentatively suitable land, the National Forest Management Act Regulations require that the economic suitability of forest lands be determined. This is completed as a part of the analysis for each Forest Plan alternative, with the acreage of economically suited lands being dependent on the objectives of that particular alternative.

In the recent past, the issue of below-cost timber sales has been brought to the public's attention. This section addresses those concerns. Table III-4a summarizes information for costs (exclusive of road costs which are presented in Table III-4b) and receipts.

Table III-4a
WALLOWA-WHITMAN NATIONAL FOREST TIMBER SALE COSTS AND RECEIPTS 1/4/

Fiscal Year	Timber Harvested Volume MMBF 2/	Timber Harvested Value MM $ 3/	Timber Sale Costs MM $ 4/
1979	218	19	5
1980	160	10	4
1981	191	13	4
1982	123	5	5
1983	149	6	5
1984	259	9	6

1/ In order to maintain comparability with data presented in other Forest Plans in the Region, the information presented in this table is that contained in the attachments to the Regional Office Below Cost Sales letter of direction dated September 24, 1985.
2/ Convertible products as shown in the Cut and Sold Reports. Convertible products are those products which are processed into other goods such as lumber and plywood. They exclude the tiny segment comprising such output as Christmas trees. Units of measure differ from those used elsewhere in this document. Figures are, therefore, not comparable to others shown in the document.
3/ Convertible products as shown in the Cut and Sold Reports. Nominal dollars.
4/ Identified as total operation cost in the attachment to the RO letter dated September 24, 1985. Nominal dollars. Includes KV, timber sale preparation and administration, timber management planning, stand examination, salvage sale fund, and some timber sale support. Roading costs are identified separately in another table.

A number of factors contribute to the Forest's high level of sales below costs. Perhaps most readily apparent is the harvest of low dollar valued lodgepole pine. Some of this material is dead or dying. Even sold green, lodgepole pine prices are normally low due to the ready availability of other highly competitive species throughout the country. The Forest has been in the process of harvesting this material because the stands were dead, dying, or stagnant; and because harvesting the material provides employment in an economically depressed area.

Harvest of this material may affect fire incidence favorably (by removing the dead fuel mass) or unfavorably (by providing access and thus increasing the possibility of human-caused fire). The harvest increases transitory forage but that forage is not generally a constraint on area wildlife or livestock. Removal of the massive amounts of dead material has also been advocated on the basis of aesthetics--some find the dead stands more unsightly than the clearcuts which replace them. In the final analysis, however, Forest management harvests the material so that new productive stands may supplant the existing nonproductive stands, and to assist the local economy.

The Forest also conducts other harvests which are not all economically justified on an individual project level basis. This is frequently the case because of the high costs of planting trees. Creating forest openings in excess of 40 acres is generally precluded by law. Two adjacent 40 acre stands could not, therefore, be harvested in the same decade. Nor could a stand adjacent to a harvest unit be harvested in subsequent decades unless the harvest unit has achieved the required degree of cover. Rather than delaying harvest on adjacent stands until the harvest unit achieves a 4 1/2 foot height for tree cover naturally, the model specifies some planting. This allows it to harvest adjacent units in the following decade rather than waiting. The cost of planting is less than the dollar loss the Forest would incur if it had to defer harvest on a lucrative adjacent stand.

Dispersing harvest units acts in other ways to increase the costs of timber harvest, thereby increasing the likelihood of below-cost sales. Harvest dispersion means more miles of road access, longer transport routes, and more time spent for setup and takedown of logging equipment than if a larger, single unit were accessed.

Some portion of the road work will yield returns in the future, as the roads are used to access other stands. The Forest claims no recreational benefit from these roads because it already has a surplus of roaded-recreation opportunities which will more than accomodate existing and projected use. It is true that those recreationists may experience less crowding, but this is not expected to significantly alter the value of the recreational experience.

Roads require maintenance and will have to be rebuilt, if still needed, when their approximate 20-year lifespan is reached. Reconstructing the roads will be less expensive than building them anew if the earlier roadway can be reused. Table III-4b summarizes recent roading costs.

Table III-4b
ROADING COSTS RELATED TO THE WALLOWA-WHITMAN NATIONAL FOREST TIMBER SALE PROGRAM 1/

Fiscal Year	Asset Value 2/ MM $
1979	6
1980	6
1981	6
1982	4
1983	4
1984	3

1/ In order to maintain comparability with data presented in other Forest Plans in the Region, the information presented in this table is that contained in the attachments to the Regional Office Below Cost Sales letter of direction dated September 24, 1985.

2/ Nominal dollars. Includes Engineering Support, Purchaser Road Construction, Timber Road Contribution, and Timber Sale Capital Investment Roads.

It is not possible to project accurately the level of below-cost sales likely in the future. This is due both to the limitations of the model the Forest is using and to such things as timber prices which may vary significantly over short time periods. Much of the information in the Forest model is necessarily average in nature. This is because the model is not capable of tracking every acre or every tree on the Forest as a totally unique entity. For example, figures for certain species groups and logging systems have been used. A single set of costs is used for cable logging less than 2,000 feet distance. There is variability within that one identified logging system and within the other three logging systems identified in the model. Consequently it is likely that some level of below-cost sales will occur, regardless of the alternative selected. The possibility exists even in Alternative G (the only alternative specifically designed to avoid below cost sales) that below-cost sales may occur. This may be disquieting to some, but it is important to keep the problem in perspective. The Forest has no control over interest rates, for instance, which are a key determinant in the level of demand, and hence prices for Forest timber. Shifts in demand could take a projected below cost sale out of that category altogether or make it even more costly.

Distinction should be made between below-cost sales and deficit sales. A below cost sale is one whose associated dollar costs are expected to exceed its dollar returns. A deficit sale is one whose appraisal indicates that the average (in terms of efficiency) purchaser would make less than an appropriate profit.

Annual sawtimber sold in recent years averaged 28.6 MMCF (159 MMBF) under the 1962 Timber Management Plan, as amended. An additional 14.6 MMCF of other materials (roundwood - 9.6 MMCF; personal use fuelwood - 5.0 MMCF) were sold during the same period. Because of the relatively small size of lodgepole pine, utilization of this material continues to depend upon the pulpwood chip market.

Installed mill capacity exceeds the current capability of the area to produce wood fiber. The supply-demand imbalance is most apparent for large diameter ponderosa pine. Ponderosa pine has generally been in greater demand, has been more accessible, and through history has been harvested at a more rapid rate than the other species. Lodgepole pine, for example, was virtually ignored until the 1970's. As a result, ponderosa pine comprised 35 percent of the standing timber inventory in 1958, but now comprises only about 23 percent of the inventory. The timber inventory is described in more detail in Appendix L.

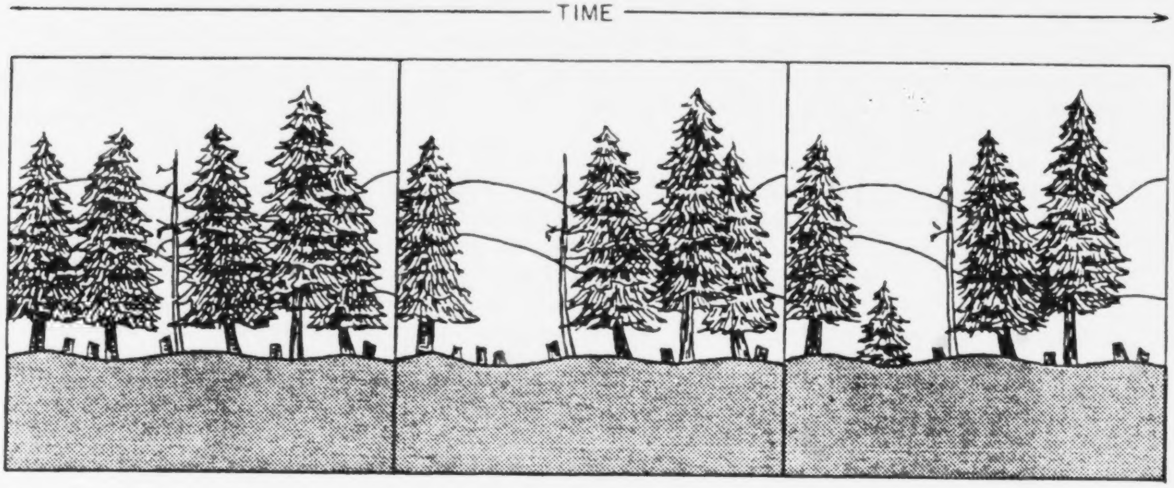
The average size of trees harvested has declined as more lodgepole pine has entered the mix. As timber stands are brought under management, trees of all species will be harvested at younger ages. This will also contribute to smaller log sizes than have been available in the past. Many local mills are best suited for the processing of larger logs and most would benefit from maintaining or increasing the sale of larger, more valuable species in the short-term. This would allow a fuller utilization of present equipment and conversion to equipment suitable for smaller materials. Maintaining or increasing sales of larger, more valuable species now would maintain or increase short-term returns to the U. S. and local governments, but would also result in reduced future returns.

Timber harvests are designed to achieve multiple-use objectives, including insect and disease control. Harvesting is accomplished through the application of silvicultural systems, such as shelterwood, clearcutting, and selection. In clearcutting all, or nearly all, trees in a stand are removed at one harvest entry. In shelterwood cutting, most of a stand is harvested in one or two "regeneration harvests" leaving only enough trees to provide shelter for the new stand underneath. When the new stand is firmly established, the remaining overstory trees are removed. In selection harvest, trees of a variety of sizes and ages are maintained and the site is always occupied by trees as illustrated in Figure III-5. (For a discussion of timber harvest methods see Appendix B, Determining Silvicultural Systems.)

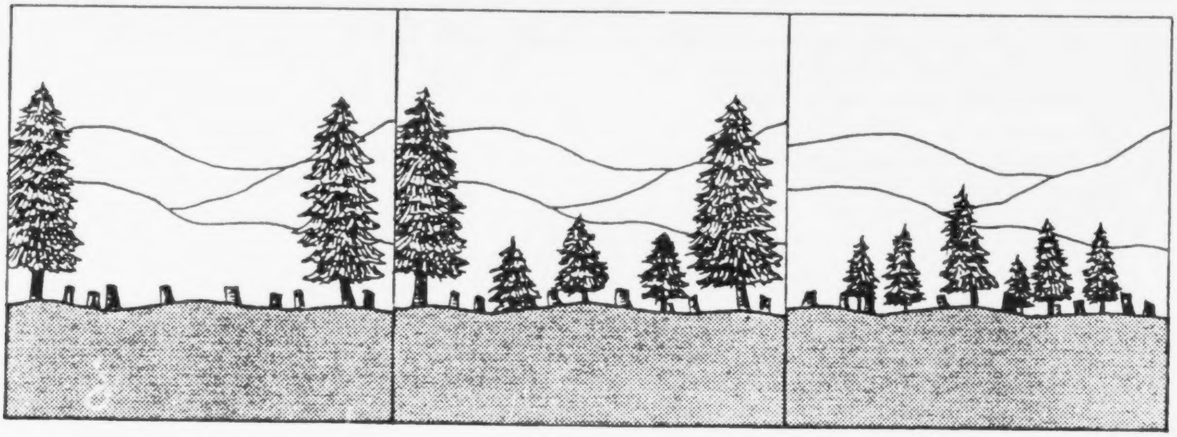
Commercial harvest techniques have been evolving to more sophisticated and less resource-impacting logging systems. The most significant trends are the increase in the use of skyline and helicopter logging systems which partially or totally suspend logs above the ground and a decrease in the use of tractor skidding of logs along the ground. Tractor yarding currently averages 70 percent of the harvest program; skyline, 22 percent; helicopter, 3 percent; and mobile yarder, 5 percent.

Timber harvesting and management have direct and indirect effects on other resources. Forage production is frequently increased, while wildlife cover is often reduced, especially in the short run. Old-growth habitat is reduced as are snags available for cavity-nesting species. Recreational opportunities are changed and visual qualities are altered. The location

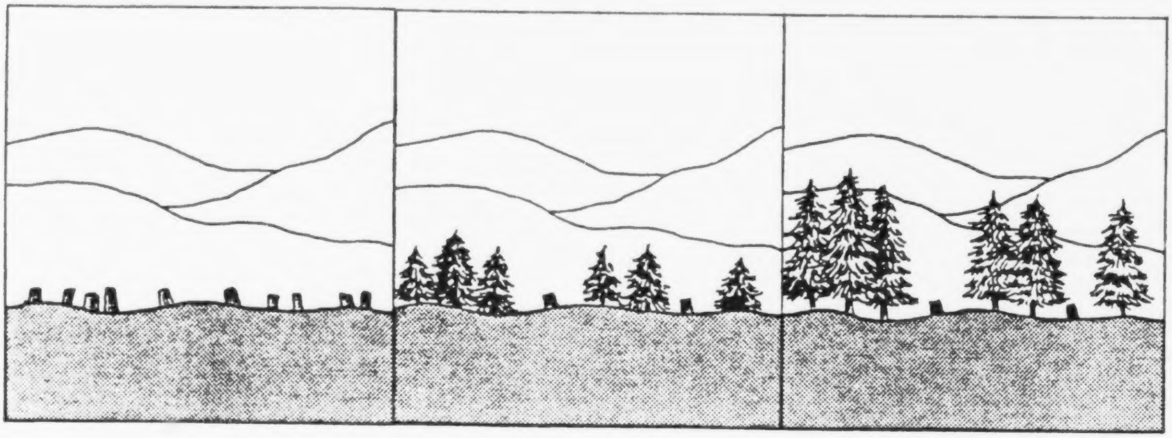
Figure III-5
HARVEST METHODS



Selection - Harvesting is designed to maintain trees of a variety of ages and sizes.



Shelterwood - Healthy, mature trees are left to provide shade and seed until a new stand is established.



Clearcut - All trees are removed in one harvest entry.

and scheduling of future timber harvest units will have significant short- and long-term implications on the abundance and distribution of cover and forage areas for wildlife, the visual quality and recreational settings provided, and the returns to the U. S. and local treasuries.

Timber harvest and road construction may reduce water quality by contributing sediment to streams and by reducing stream shade. This also affects fish spawning and rearing. The roads required for timber removal take lands out of production. Site productivity may also be lost due to soil compaction and erosion on harvested lands. Short-term localized streamflow increases may result. Timber harvest may increase or decrease the diversity of plant and animal species across the Forest.

Forest Pests - Insects and disease have caused an estimated mortality of over 74 million board feet of sawtimber per year over the last ten years. About six million board feet of sawtimber is salvaged annually. Some of the remainder is harvested as pulp material or fuelwood. A Douglas-fir tussock moth outbreak in 1972-74 severely damaged white fir and Douglas-fir stands on the north end of the Forest. This insect damage, followed by a drought, resulted in population buildups of fir engraver and Douglas-fir beetle.

A mountain pine beetle epidemic on the Forest in the 1970's resulted in large areas of tree mortality, primarily in lodgepole pine. Salvage of the dead and dying material is continuing in accessible areas under a multi-year rehabilitation program. More recently, a spruce budworm epidemic has affected a substantial portion of the Forest. Other significant insect pests include the spruce bark beetle, larch casebearer, pine engraver, and western pine beetle.

Dwarfmistletoe infection of ponderosa pine, lodgepole pine, Douglas-fir and western larch results in significant growth losses. Most stands have infection levels that can be managed with acceptable growth rates; however, some stands are so heavily infected they will need to be removed and new plantations of healthy trees established.

Significant timber losses also occur as a result of stem decays, root diseases, stem and branch rusts and a number of foliage diseases.

The ability to prevent future insect and disease outbreaks is somewhat dependent upon the level and intensity of timber management. Many forest pests can be held to endemic levels through intensive timber management practices. Activities such as precommercial thinning and harvesting trees before they become old and decadant tends to maintain healthy, vigorous stands which are less susceptible to insects and disease. Areas where timber harvest is prohibited or reduced, such as in wilderness, visual corridors, riparian zones and undeveloped lands may be more vulnerable to attack and may serve as source areas for disease outbreaks on adjacent lands.

The Forest uses herbicides to control noxious weeds and sometimes to control grasses or sedges in tree plantations. In comparison with Forests on the west side of the Cascade Mountain range, there is much less need for the use of herbicides on the Wallowa-Whitman. There is not the need for broad application of herbicides to control vegetation on clearcuts, for example. Applications are often by hand, treating only the few square feet near each tree seedling.

A relatively small portion of the commercial timberland on the Forest (approximately 62,000 acres) contains ninebark shrubs which are highly competitive and will prevent tree reestablishment if not controlled. On steep lands, use of herbicides is the only known practical means of controlling the shrubs.

Herbicides are also used to control roadside vegetation (especially along State highways), to control vegetation within powerline corridors, and to control noxious weeds and other competing vegetation. All such uses are analyzed on a case-by-case basis and are tiered to the Regional Environmental Impact Statement (USDA Forest Service, 1981, as supplemented).

Fuelwood

Continuation of recent trends indicates an increase in fuelwood consumption. Historically, the collection of fuelwood has been a recreational activity to many local families plus a principal source of home heating in area communities. With the increasing use of wood for home heating, commercial harvest of fuelwood is expected to increase. Commercial cutters are hauling fuelwood from the Forest to sell in the Tri-Cities area in Washington. Idaho residents and contractors are also traveling into the Forest from the Boise-Nampa area for fuelwood. As fuelwood use for home heating has increased, so has the level of smoke in local communities.

Personal use of fuelwood is being used to remove a backlog of dead and down material left from timber sales and the mountain pine beetle epidemic. Toward the end of the decade, fuelwood is expected to come primarily from the thinning of green trees in overstocked tree stands, as well as logging residue. Fuelwood may eventually compete with the sawtimber and roundwood markets. A stronger market for commercial fuelwood is anticipated, particularly for the southern Idaho area.

To some extent, the availability of fuelwood is dependent upon the degree of access to the Forest. Areas which are left unroaded or where roads are closed provide less fuelwood than portions of the forest which are readily accessible. Historically, this has not been a problem. As future stands of trees become more intensively managed, tree mortality and the availability of fuelwood are likely to become more of a concern.

Figures III-6 and III-7 display the historical trend in fuelwood permits and a projection of fuelwood supply. Under the current fuelwood program the Forest receives $2.50 for each cord sold. Prior to 1983 all personal-use fuelwood permits issued on the Forest were free. In many instances, permits were obtained but not used, or were obtained for a larger volume of wood than was actually cut. In 1983 the Forest began charging for personal-use

Figure III-6

HISTORICAL PERSONAL-USE FUELWOOD CONSUMPTION *

(1971 – 1985)

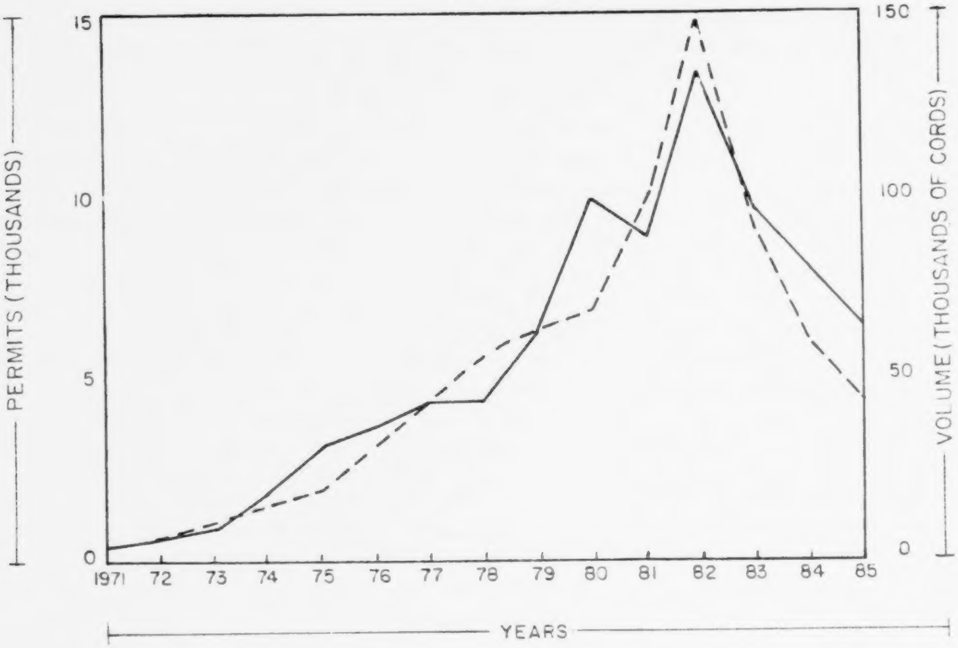
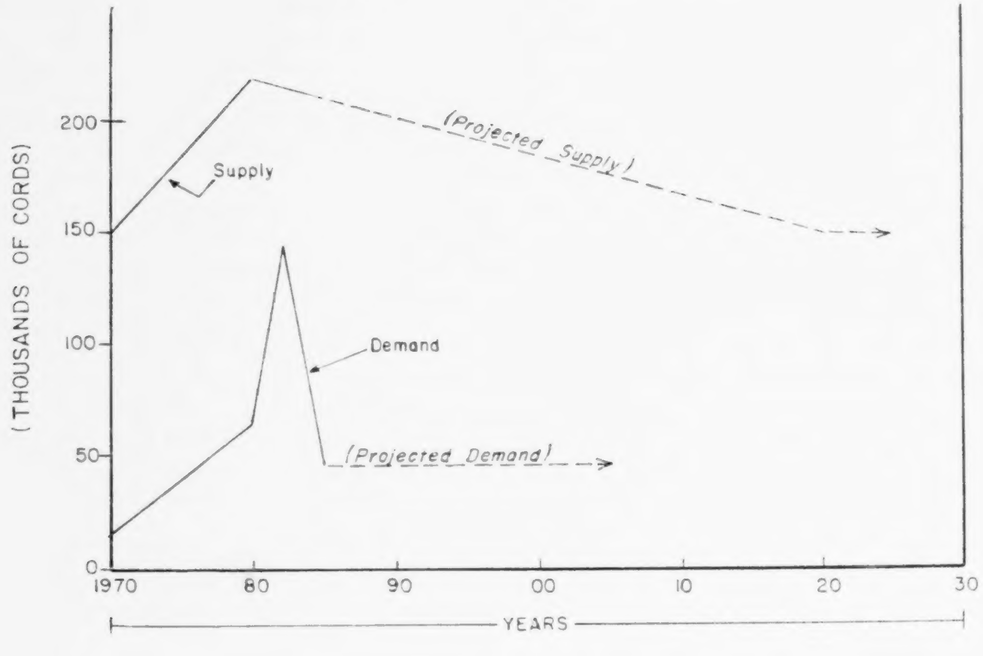


Figure III-7

PERSONAL-USE FIREWOOD TREND



fuelwood on some Ranger Districts. By 1985 all Districts had implemented a charge program except Wallowa Valley, Eagle Cap, and the Hells Canyon National Recreation Area. The number of permits and volume of fuelwood displayed in Figure III-6, and the demand line in Figure III-7 reflect estimates of fuelwood use prior to 1982 and show a marked decline as the charge fuelwood program was implemented. Values for 1985 best provide an estimate of current use and a starting point for projecting future demand.

Old-Growth Forests

During the past ten years, there has been a growing interest in old-growth forest ecosystems, brought about by an awareness that unaltered old-growth stands are diminishing. The reason most often given for retaining old-growth is to meet wildlife needs, but the desire goes beyond this. On the Wallowa-Whitman National Forest there is no wildlife species that has been identified as requiring solely old-growth forest, although some species require conditions that are best represented in old-growth stands.

Mature and old-growth timber stands provide features of habitat such as large snags, down logs and multiple canopy layers which are essential to numerous wildlife species (Thomas and others 1979). These features are best provided by old-growth and are nearly absent in immature stands. Many species utilizing these features are habitat specialists and less tolerant of habitat alteration than the habitat generalist species which typify the early successional stages. Large woody debris of the forest floor within old-growth stands is valuable for nutrient cycling and stream stability (Franklin 1981), and provides uniquely stable, cool, moist environments for animals and substrate for microbial and root activity (Maser and Trappe 1984).

Some minimal distribution of, and continuity between, mature and old-growth habitats is essential to maintaining diversity and viability of wildlife species. Fragmentation of these stands by logging isolates members of a population and begins to limit reproductive success. The increasing isolation of mature and old-growth stands increases the risk of reproductive failure, eventually threatening the entire population of some wildlife species (Soule' and Wilcox, 1980).

People also want old-growth forest for the recreational enjoyment it provides, for aesthetic and other qualities such as the size of the trees. Those opposed to the retention of old-growth conditions cite their concern for the loss of wood production. They would prefer that land be converted to rapidly growing timber stands. These conflicting desires are the basis of the old-growth forest issue. For further discussion of the issue, see the Regional Guide and Chapter I of this DEIS.

At present there are some 173,000 acres of old-growth forest on the Wallowa-Whitman National Forest, including some 67,000 acres in classified wilderness. Nearly 60,000 of the acres outside the wilderness are currently scheduled for timber harvest.

Under current land management plans there are 131 areas of 100 to 3,000 acres totalling 73,000 acres within the commercial forest land base that have been designated for management as old-growth timber. Of these areas, 28,000 acres meet the definition of old-growth now. The remaining areas are in various successional stages leading to old-growth. The distribution of these areas is not adequate to meet the minimum management requirements for species needing old-growth or mature timber. In addition, a minimum of 10 percent of the lands in the Dispersed Recreation Timber Management (Management Area 11) allocation in the Hells Canyon National Recreation Area is to be managed as old-growth and all the timber in the Forage Management allocation (Management Area 10), also within the HCNRA, is to be so managed. In certain other land allocations, timber cutting is not permitted or is permitted at a very low rate, thereby providing substantial old-growth values.

Diversity

Plant community diversity on the Wallowa-Whitman is provided by a complex mosaic of vegetation which has grown in response to variations in land form, elevation, aspect, climate, substrate and soils. It has been further modified by the influence of fire, insects, disease, mining, grazing, logging, and the introduction on nonnative plants. Identifiable associations of vegetation occur in repeating patterns within this mosaic. These associations, called community types, are indicative of productivity, and are described in part for the Wallowa-Whitman in Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington (Hall 1973).

Inherent diversity on the Forest is high. Ponderosa pine, Douglas-fir, grand fir, subalpine fir, Engelmann spruce, and lodgepole pine communities are complexly intermingled with one another, and with grassland, rock, meadow, and hardwood shrub communities.

In the absence of human activities, diversity would probably be represented by mature forest stands with relatively little understory vegetation and numerous, small (1/4 acre to 20 acres) openings. Diversity would also be represented by young stands in the ponderosa pine and Douglas-fir types resulting from frequent low-to-moderate intensity fires. The true fir and Engelmann spruce types are naturally dominated by extensive, mature, multistoried timber stands with shade intolerant species such as ponderosa pine and western larch well represented in the overstory (particularly at lower elevations). Infrequent high intensity fires provided the opportunity for these shade intolerant species to become established in similarly extensive stands. Lodgepole pine also establishes itself well after such fires and the current dominance of mature lodgepole pine on many areas arises from turn-of-the-century fires.

In the existing situation, many of the large (mature) overstory trees have been removed through harvest. Particular selection has been made for ponderosa pine. This has resulted in irregular dominance of younger stands of ponderosa pine and Douglas-fir where these species represent the community type, and increasing dominance of true firs on the true fir community types. The latter represents a species composition shift and a reduction of diversity within the stands. Increased emphasis on regeneration harvest in the last ten years has provided opportunity for ponderosa pine, Douglas-fir, and western larch to become re-established in white fir community types and has therefore caused greater diversity between and within stands. Timber harvest, and the establishment of new trees is breaking up the existing extensive mature lodgepole pine stands which have suffered heavy mortality from the mountain pine beetle.

Transportation

Transportation facilities for the Forest include approximately 9,300 miles of road, 6,000 miles of which are open to use, 1,750 miles of trail, and five landing strips, all of which occupy some 14,000 acres of land. In addition, the Snake River provides 68 miles of stream that are part of the transportation network. The arterial and collector road system (major roads) is established and is likely to be satisfactory for serving most future management needs. Exceptions are the undeveloped areas. These will require additional roads if they are to be developed.

The present trail system primarily serves the two wilderness areas, unroaded areas in the Hells Canyon National Recreation Area, and the Elkhorn Range. Whereas the trails once served many administrative purposes (such as access to remote fire lookouts), there is now management concern that the trail system needs to be brought more in line with recreational needs such as access to scenic vistas or fishing access.

Approximately 65 percent of the trail system is considered to be adequate to meet present needs. The remaining trails need reconstruction or relocation to correct inadequate drainage, eroded tread and other problems. There is a need to acquire rights-of-way in several instances where a portion of a major trail crosses private land. This is a particularly serious problem in the Imnaha River drainage.

Three trails have been designated as National Recreation Trails. The Elkhorn Crest National Recreation Trail follows the backbone of the Elkhorn Mountains for 22 miles from the Anthony Lakes developed recreation area to Marble Pass, providing views of Baker and Sumpter Valley and into the North Fork John Day Wilderness. The Nee-Me-Poo National Recreation Trail runs 3.7 miles near Dug Bar in the Hells Canyon National Recreation Area. This trail follows a part of the 1,800-mile route used by Chief Joseph and 400 other Nez Perce Indians in their historic flight in 1877. The Snake River National Recreation Trail runs from Pittsburg Landing, south to Brush Creek on the Idaho side of the Snake River, a distance of about 35 miles.

Of all the various transportation facilities, roads usually have the most significant positive and negative impacts. Additional road construction in unroaded areas, and the number of miles of roads that are open to unrestricted public use, have been identified as issues to be dealt with in the Forest Plan. A brief history of the road system on the Wallowa-Whitman is helpful in understanding the current situation:

Much of the National Forest was logged by railroad in the early part of the 20th century, but since the 1930's roads have become the primary method of accessing timberlands. Although some roads were built in connection with mining activities, timber harvesting was the reason behind construction of a large majority of the existing roads on the Forest. Most roads were built to remove timber, provide for other uses such as recreation and fire access, and to establish a basic system that could be used for future management activities.

By the end of the 1960's, most of the basic road system had been constructed into the Forest timbered areas, and the emphasis began shifting from accessing new areas to reconstructing older roads to meet more stringent environmental concerns, serve an increasing public recreation traffic, and to better meet the needs of different, and sometimes larger, logging equipment. By the mid-1970's, construction of new roads on the Forest was averaging 100 miles per year, but reconstruction was averaging about 200 miles per year. Most reconstruction was to improve roads which had been built 20-40 years before, and consisted of upgrading to higher standards for reasons of safety, reduced maintenance, reduced timber haul costs, and to a large extent, to extend the logging season. Logging on the Wallowa-Whitman is limited to a short, dry summer period, plus a few areas where winter logging is feasible, but improved roads (particularly placing rock surfacing on the roads) can extend that season significantly. This extension of the logging season was considered to be beneficial to the local economy by allowing a longer period of employment.

As the 1970's drew to a close, the public and the Forest Service became increasingly concerned about the high cost of road construction and reconstruction activities. Standards were reanalyzed and new guidelines developed which were more flexible than had been the case. The Forest Service land managers began to look more closely at the benefit/cost ratios associated with roads, and written objectives were used to document the minimum criteria for which roads were to be designed. As a result of this increased cost-consciousness, both construction and reconstruction standards were reduced and brought in line with actual needs. The effect of these changes are shown in Table III-5, where the cost of construction and reconstruction shows a significant drop in 1982 and 1983. In addition to the costs associated with timber road construction, haul, and maintenance, the Forest Service also incurs costs associated with maintaining the transportation system for public use and for administrative purposes. These maintenance costs average approximately $900,000 per year for roads and $150,000 per year for trails.

Reductions in the cost of road construction were not made without impact. Many of the decisions on limited road access were based on strict control of use, including public access, to allow roads to be built for single purposes only, and to be closed to all uses during long periods between projects.

Although placing restrictions on access is considered in a negative light by many users, there are others who favor such actions. Those recreationists who favor more solitude, less crowding, and more primitive conditions in the National Forests favor reduced access and lower standard roads. Wildlife managers are also faced with contradictory feelings regarding access. While roads allow better dispersal of hunters and easier harvesting of game, they can also reduce the quality of the habitat as the impact of users increases (Thomas and others 1979). To deal with this problem, the Forest Service and the State of Oregon (Department of Fish and Wildlife) have been involved in cooperative efforts aimed at balancing the number of open and closed roads based on habitat and hunter needs. Many areas of the Forest have roads that are closed either seasonally or year-round in an effort to deal with this situation. In an effort to provide some consistency across the Forest in dealing with road closures, the Wallowa-Whitman developed a general guideline in the late 1970's which was aimed at managing for an open road density of no more than 2.5 miles per square mile in roaded areas of the Forest. This guideline was intended to provide some balance between the needs of those wanting roads closed and those wanting more open roads (such as fuelwood cutters, and berry pickers).

Table III-5
TRANSPORTATION COSTS
(Figures Shown in 1982 Dollars)

	Variable Transportation Costs 1/	Purchaser Credits for Road Construction and Reconstruction 2/
1983	$7,162,900	$2,720,800
1982	6,130,400	2,726,600
1981	9,446,700	5,913,300
1980	6,455,100	3,851,900
1979	8,572,600	6,465,600
1978	6,736,100	4,691,700
1977	7,515,900	2,546,300
1976	4,798,300	3,694,200
1975	5,927,200	6,186,500
1974	3,351,700	3,316,300
1973	5,592,500	4,627,200
1972	3,931,300	4,712,400
1979-1983 Average	$7,553,540	$4,335,640

1/ The costs of hauling timber and of maintaining Forest System roads over which the timber is hauled.
2/ The cost of road work necessary to harvest the timber.

Roads which are located too close to streams can also be contributors of stream sedimentation. Research indicates that much of the sediment from forest lands that reaches stream channels originates on roads (Meevwig and Packer 1976). Many miles of roads on the Wallowa-Whitman are located adjacent to streams, as these "water grades" were a natural location as access was spreading into the Forest. Many of these streamside roads have been closed off during timber sales and other project work over the years, but many more still exist. Most of the roads served only short, local purposes (spur roads), and as such they can be closed without much impact.

However, several major roads also parallel streams, and the cost of closing these or construction of new roads in their places can be prohibitive. Therefore, these major roads are usually left in place and the effects mitigated by using improved drainage and reducing surface erosion by paving or other methods.

The Forest recently completed an inventory of all roads that exist (including "wheel tracks") so that management decisions can be made on which roads should be retained as part of the permanent system and which can be closed off and returned to resource production. Table III-6 shows the present condition class of all the roads on the Forest.

Table III-6
CURRENT TRANSPORTATION SYSTEM
(Miles of Roads)

	Arterial	Collector	Local	Total
Primitive (wheel track)	9	90	2,651	2,750
Graded, Drained, Unsurfaced	180	830	4,110	5,120
Graded, Drained, Surfaced	178	593	525	1,296
Paved	118	11	9	138
Total on Forest	485	1,524	7,295	9,304
National Forest System Roads Outside Forest Boundary	47	99	136	282

Federal and State highways and county roads are an important consideration in management of the Forest and the Forest transportation system. Interstate 84 passes through the Forest for some six miles and the Forest is visible for nearly 50 additional miles, making aesthetics a primary concern. The Forest is also bisected by Oregon State Highways 244, 7, 3, and 203. Numerous county roads enter or skirt the Forest. The Forest

Service coordinates with State and county governments on matters concerning rights-of-way for these roads and when Forest roads connect to State and county roads.

Livestock Grazing

In FY 1984, the Forest provided seasonal grazing for 21,900 cattle and 16,700 sheep. These livestock are owned by 144 permittees who use the 164 established grazing allotments. For this grazing, permittees paid over $130,000. Total permitted use has averaged some 186,000 AUM's while actual use has averaged 153,600 AUM's over the 1982-1984 period. Seasons of use vary from mid-winter months in portions of the Hells Canyon National Recreation Area to late summer months at higher elevation allotments.

There is a desire on the part of the local livestock industry to maintain and increase National Forest grazing. This fits with RPA projections of increases in our national populations and in our total demand for beef (USDA Forest Service 1984).

Complicating the matter are concerns about streamside damage to soil, vegetation, and water quality from livestock grazing, and the cost of improvements needed to alleviate such concerns. Some people feel that domestic livestock grazing should be eliminated from wilderness areas while others feel that grazing should not occur on any National Forest lands.

Particular problems occur in the steep canyon areas where cattle tend to concentrate along stream bottoms, overutilizing the forage and damaging riparian vegetation. Hells Canyon presents particular problems in that the rugged terrain, suitable only for sheep grazing, has proven to be unprofitable for several operators in recent years. Consequently, large allotments have not been profitably used. Future use apparently depends on an upturn in market conditions.

Some range management situations have improved as Forest Service managers and livestock owners work together to alleviate specific problems. However, in some areas, grazing use continues to exceed capacity, resulting in less-than-satisfactory range conditions. Those grazing allotments on which adjustments or reductions in use are necessary in order to reverse range degradation problems are Alder Spring, Cayuse-Pumpkin, China Creek, Chesnimnus, Day Ridge, Hunting Camp, Swamp Creek, Mormon-Sleepy, Eagle Valley, Pine Valley, and Catherine Creek. These allotments are found within the Sumpter, Snake River, Chesnimnus, Keating, Pine Creek, and Catherine Creek State-designated game management units. Since the allotments are used by livestock, elk and deer, consideration for adjustments will need to include all of these animals.

Timber management has generally been compatible with grazing in that a managed timber stand permits more forage growth than does a densely-stocked stand. Occasional problems occur when domestic livestock trample new tree seedlings or eat new tree growth. Areas disturbed by timber management activities have often been seeded with forage species to prevent erosion and restore or increase grazing capacity.

In some parts of the Forest, notably on the Oregon side of Hells Canyon, concern has been expressed over competition with big game, primarily elk. This competition includes not only forage competition but competition for space (elk tend to avoid areas occupied by cattle). Unfortunately, the relationships are not well understood. (Also see discussion under Wildlife.) There is also concern that domestic livestock may contribute to some diseases in big game. This is particularly true of domestic sheep and bighorn sheep.

Wildlife

Three hundred seventy-nine species of terrestrial vertebrate wildlife are known to occur within the Forest. These species include 10 amphibians, 16 reptiles, 263 birds, and 90 mammals (Thomas and others 1979). Fifty-one of the bird species are migrant or accidental visitors.

The NFMA Regulations require that "fish and wildlife habitat be managed to maintain viable populations of existing...species in the planning area." To insure this, the regulations direct that (1) "Habitat must be provided to support, at least, a minimum number of reproductive individuals; and (2) "Habitat must be well-distributed so that those individuals can interact with others in the planning area." The key concepts in these two items are adequate numbers of reproductive individuals, and assurance that these numbers will continue to exist through interaction of individuals within the population.

To assure that these viable populations are maintained, the Pacific Northwest Region of the Forest Service has identified minimum management requirements (MMR's) for a number of wildlife species within the Region. These species are emphasized either because they are threatened or endangered (such as the bald eagle or American peregrine falcon) or because their populations can be used as an indicator of the health of a specific type of habitat. (For example, the pileated woodpecker is highly dependent on snag habitat. If good habitat is provided for pileated woodpeckers and their population is maintained at some desired level, it is assumed that adequate habitat is also being provided for other snag-dependent species.) Species used to indicate the suitability of specific types of habitat are called management indicator species.

The management indicator species on the Wallowa-Whitman are: the northern bald eagle and American peregrine falcon (threatened and endangered species respectively); the Rocky Mountain elk (a species commonly hunted and also an indicator for mule deer habitat); the pileated woodpecker, goshawk, pine marten, whiteheaded woodpecker, and three-toed woodpecker (indicators of snag habitat and old-growth forest stands); Cooper's hawk and sharpshinned hawk (early successional forest habitat); the yellow warbler (riparian habitat); and salmonids (instream habitat). The rationale for selection of these indicator species is discussed in Appendix G.

The Wallowa-Whitman National Forest provides habitat for more than 20,000 Rocky Mountain elk, and is widely recognized for the elk hunting it provides. (Also see Recreation Section.) Elk numbers have increased in response to favorable habitat conditions since their introduction in the 1920's. Timber harvest has "opened up" areas which were dominantly forest, providing significant increases in forage available to elk. Available cover has been surplus to elk habitat needs so that much of the past timber harvest activity has, by design or accident, improved habitat. However, significant shortages of cover naturally exist or have been caused by timber harvest on portions of the Forest. Continued timber harvest may maintain or enhance cover/forage relationships if rates of harvest can be limited to allow proper distribution of harvest units. Limiting the rate of harvest reduces the potential amount of timber available to local mills in the early decades.

The issue is complicated by the introduction of roads. Open roads can cause displacement of elk and the combination of forage, cover, and road access influences the number of elk hunting opportunities provided on the Wallowa-Whitman National Forest.

Bear, cougar, mountain sheep, mountain goat, grouse, and chukar partridge are also hunted and provide recreation for significant numbers of people. Many species of wildlife are adaptable to use of the Forest by humans. Some are not, or are not capable of sustaining as high a population level as is possible in a Forest with little human influence. An example is the mountain bluebird whose numbers have apparently declined in direct proportion to the decline in standing dead nesting trees. The numbers of cougars, bobcats, pine martens and numerous other species have also declined as use of the Forest by people has increased. Historically, these species were not valued to the same extent as game animals which provided food and hunting recreation.

Deer, and to a lesser extent elk, are relatively adaptable to human activities; elk are probably present in greater numbers today than at any time in recorded history. However, because of their importance to the increasing numbers of recreational hunters, there is a desire for more animals to hunt. Since deer and elk utilize the coniferous forest for cover, and eat many of the same plants which livestock eat, conflicts do occur.

The eating habits of elk are much closer to those of domestic livestock than are those of deer. It is recognized that there is a level of competition for forage between elk and domestic livestock where dual use by these animals occur. However, the actual amount or level of competition is highly variable between areas and seasons of the year and is not well understood.

While the Forest Service has responsibility for managing wildlife habitat on National Forest lands, the States are primarily responsible for managing the wildlife species on all lands. In Oregon, this responsibility is assumed by the Oregon Department of Fish and Wildlife. In Idaho, the programs are managed by the Idaho Fish and Game Department. These wildlife management agencies are pressured by the hunting public to increase elk numbers, the habitat of which is on public and private lands which have competing uses. In recognition that big-game numbers cannot continue to increase indefinitely, the States have established elk and deer population objective levels for each game management unit. At present, most units on the Wallowa-Whitman have reached these target levels, although deer populations are currently down in several units due to recent severe winter weather conditions. Big-game numbers on the Idaho portion of the Hells Canyon NRA are below recent historical levels and State objectives.

Deer and elk support a high level of recreational activity since hunters (especially elk hunters) tend to tolerate a low rate of success. As success ratios vary, the level of recreational use may or may not follow.

The majority of the National Forest lands provide summer range for elk and deer while most of the winter range is found on private lands and other public lands at lower elevations.

The winter range found on National Forest land is considered very important, however, since the potential for conflicts arising from winter wildlife use are fewer on these lands than on private lands. Much of the winter range on the Forest is dominantly grassland or mixed timber-grassland. Cover for deer and elk is limited in quality and distribution on these portions of the winter range. Thermal cover is especially important on big-game winter ranges (Leckenby 1984). Current management direction gives special consideration of cover values on most of the winter ranges, though recent, more detailed mapping has identified additonal winter range areas. Deer and elk which summer on the Forest impact area ranchers where the ranches lie within the natural winter range of the game animals. This problem has been mitigated by State feeding progams.

A number of fish and wildlife projects are completed each year in cooperation with the Oregon Department of Fish and Wildlife. Some of these, such as species management or the cooperative road and area closure program, are species-related while other projects are direct habitat improvement.

Threatened, Endangered and Sensitive Species

The Endangered Species Act of 1973 (PL 93-205), as amended, declared that Federal agencies shall seek to conserve endangered and threatened species of plants and animals. In order to meet the intent of this direction, the Forest Service has established objectives and policies for inventorying the species, determining habitat or environmental needs, and protecting critical habitat and/or conditions necessary to preserve the plants or animals (FSM 2670). Included is direction to protect certain sensitive species to ensure that they do not become threatened or endangered. The U. S. Fish and Wildlife Service, USDI, has responsibility for administering the Endangered Species Act. When the Forest Service proposes an activity that may affect a species listed or proposed for listing as threatened or endangered, the Fish and Wildlife Service is consulted.

The northern bald eagle winters along several streams on the Forest and a pair nesting near Unity Reservoir has successfully reared young. Key areas identified in the August 1984 draft of the Pacific States Bald Eagle Recovery Plan (Steennoff and others 1984) include the Unity Reservoir, John

Day River, Powder River, Burnt River, Grande Ronde River, Wallowa River, Minam River and Wallowa Lake. Large-limbed green trees near these waters are important to both roosting and potential nesting for the bald eagle. Eight pairs of nesting bald eagles are the target for recovery of the population in these areas.

Peregrine falcons have been sighted recently in Hells Canyon and Joseph Creek. At least one historical nest site exists in the Hells Canyon Wilderness and the area has identified potential for recovery of peregrine falcon. Northeast Oregon has been targeted for four pairs of peregrine falcon in order to move the population from endangered to threatened status (Harlow and others 1982).

The threatened, endangered, and sensitive species on the Wallowa-Whitman are listed in Table III-7.

Table III-7
THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Animals

List	Species	Status
Endangered	Peregrine Falcon	Several areas on the Forest exist where sightings have occurred.
Threatened	Northern Bald Eagle	One nesting pair and significant wintering populations along several rivers on Forest.
Sensitive	Ferruginous Hawk	Feeding, nesting, and rearing occur on Forest in several areas.
	Swainson's Hawk	Same as ferruginous hawk.
	Wolverine	Abundant habitat exists on Forest but sightings are uncommon.
	Long-billed Curlew	Habitat exists on Forests and scattered sightings have occurred.
	Western Spotted Frog	Habitat exists on Forest, but populations not identified at present.
	Townsend's Big-eared Bat	Known to occur within the Forest but the range and population size are unknown.

Table III-7 (Continued)
THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Plants

List	Species	Status
Endangered	MacFarlane's Four O'Clock	Currently found at three sites in Snake River Canyon.
Threatened	None	
Sensitive	97 species	These are species which have occurred in the Federal Register as proposals for classification and are (1) under consideration for official listing as endangered or threatened; (2) are on the official State list; or (3) are recognized by the Regional Forester as requiring special management to prevent the need for their placement on Federal or State lists (FSM 2670, W-W Supp. No. 12).

Due to their numbers, sensitive plants are a source of concern for management. The Forest maintains a record of the known sightings of sensitive plants. Trained personnel are developing the capability to predict when and where these plants are likely to occur. Volunteer professional help from universities and private sources has been helpful in preparing this record. The Forest is currently working with Oregon State University in a remote sensing project (earth satellite) which will further this effort. Most of the sensitive plants are also included on a "Special Plant Species" list which was adopted in 1981 by the State of Oregon. The Forest Service and the State cooperate in inventory and protection of the various species. As projects are planned, a check is made to determine if a sensitive plant species is likely to occur at or near a project site. If these plants are known to be in the project area, a biological evaluation is necessary. Of particular concern are activities such as livestock grazing, road construction, and timber sales, which can affect large areas. The results of the evaluation could result in the project being altered or cancelled to protect the species in question. In some cases, a biological evaluation can be satisfactorily made only during certain seasons. Therefore, it is possible a project could be delayed six months or more.

Fish

Rainbow or eastern brook trout inhabit most perennial streams within the National Forest. In many instances they are in association with various rough fish (shiners, suckers, dace, and squaw fish). Numerous small alpine lakes within the Wallowa, Elkhorn, and Seven Devils Mountains are stocked with trout, as are Balm Creek Reservoir and Fish Lake. Phillips Reservoir provides the largest body of water within the National Forest and is good habitat for trout, smallmouth bass, and coho salmon.

Major anadromous fishery streams are shown in Figure III-8. Chinook and coho salmon comprise the commercial anadromous species spawned on the Forest. Numerous streams also provide habitat for steelhead trout. Anadromous fish from spawning grounds on the Wallowa-Whitman play a role, not only as commercial and sport fish, but also in the culture of the Native Americans who retain certain fishing rights to them by treaty.

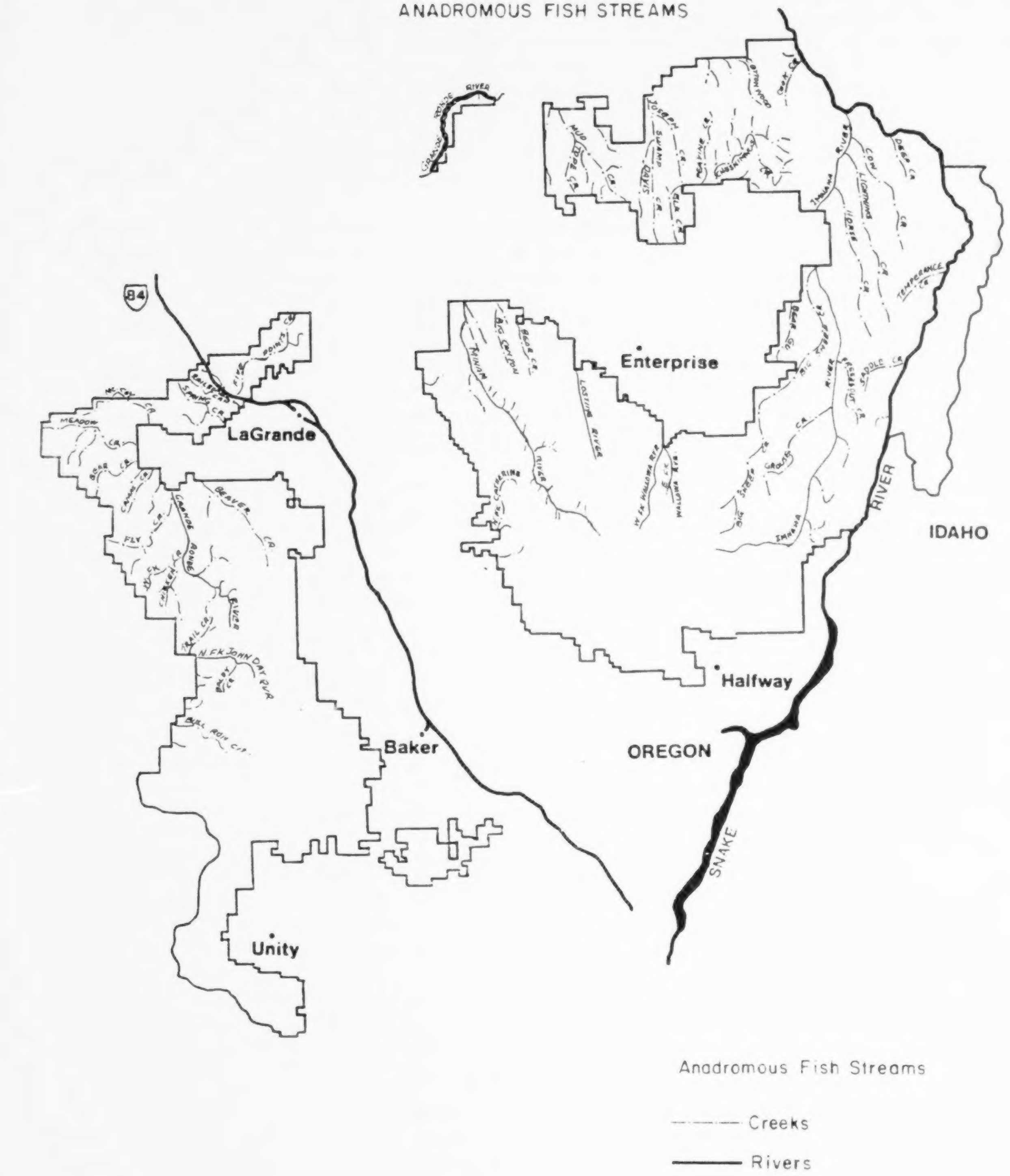
Prior to the 1950's, the spawning streams of the Wallowa-Whitman played a significant role in the salmon and steelhead fisheries of the Columbia River System. However, beginning with the construction of Bonneville Dam in the mid-1930's, a total of 11 dams have been constructed on the Columbia and lower Snake Rivers which have either totally blocked anadromous fish runs or have significantly contributed to their decline. Presently, the Imnaha and the Grande Ronde Drainages are the highest upstream spawning streams tributary to the Snake River in Oregon. Combined, they provide for about 640 miles of spawning and rearing habitat for salmon and steelhead. Fish from these two streams must pass eight dams on the lower Snake and Columbia Rivers in their round trip to the ocean. An additional 26 miles of spawning and rearing habitat exist on the upper North Fork John Day River within the Wallowa-Whitman. Fish from these streams must pass three dams.

Juvenile fish (smolt) suffer heavy losses during downstream passage over or through these dams. The estimated survival rate for smolt making their way to the ocean in recent years is 0.2 to 0.7 percent on the Imnaha and Grande Ronde, and 2.5 to 4.0 percent on the North Fork John Day. If this low rate of spawning escapement to the ocean were allowed to continue, the fish runs would soon disappear, particularly on the Imnaha and Grande Ronde systems. The full impact of the escapement problem can be seen in Table III-8. As shown, it is estimated that steelhead and salmon production from the National Forest streams could increase from about 73,000 pounds to about 1,380,000 pounds if full escapement were effected. Commercially harvested salmon are estimated to be worth about $1,050 per thousand pounds caught (USDA Forest Service 1984). State, Federal, and tribal agencies are presently investing millions of dollars in projects to provide better escapement. Projects such as barge transportation of smolt, improving passage facilities at dams, and increasing river flows during out-migration are all designed to increase escapement. These efforts have begun to show results with higher spawning redd counts inventoried during recent spawning seasons. Fishery biologists are optimistic that anadromous fish runs in the Columbia and Snake Rivers can be restored to near the 1950 level.

The Pacific Northwest Electric Power Planning and Conservation Act of 1980, 16 U.S.C. 839 et seq (the "Northwest Power Act") directed the Northwest Power Planning Council to "promptly develop and adopt...a program to protect, mitigate, and enhance fish and wildlife including related spawning grounds and habitat, on the Columbia River and its tributaries." The Act further directed that "The Program, to the greatest extent possible, shall be designed to deal with that river and its tributaries as a system." To this end a fish and wildlife program has been developed by the Council as a result of this Act and fish and wildlife enhancement work on the Forest is part of the program. The Forest is receiving between $50,000 and $150,000 annually for habitat improvement on steelhead salmon spawning streams within

Figure III - 8

ANADROMOUS FISH STREAMS


GRANDE RONDE RIVER
MUD CR.
TROUT CR.
JOSEPH CR.
SWAMP CR.
DAVIS CR.
ELK CR.
PEAVINE CR.
CHESNIMNUS CR.
COTTONWOOD
CROW CR.
IMNAHA RIVER
COW CR.
LIGHTNING CR.
HORSE CR.
DEEP CR.
TEMPERANCE CR.
BEAR GU.
BIG SHEEP CR.
RIVER
FREEZEOUT CR.
SADDLE CR.
GROUSE CR.
BIG SHEEP
IMNAHA
RIVER
IDAHO
Enterprise
BIG CANYON
BEAR CR.
MINAM
RIVER
LOSTINE RIVER
N. FK. CATHERINE
W. FK. WALLOWA RIV.
E. FK. WALLOWA RIV.
84
FIVE POINTS CR.
RAILROAD CR.
SPRING CR.
N. CAT.
CR.
MEADOW CR.
BEAR CR.
CANDY CR.
LaGrande
GRANDE RONDE RIVER
BEAVER CR.
FLY CR.
CR.
W. CR.
CHICKEN CR.
TRAIL CR.
N. FK. JOHN DAY RVR.
BABY CR.
BULL RUN CR.
Halfway
Baker
OREGON
SNAKE
Unity
Anadromous Fish Streams
Creeks
Rivers

Source: Oregon Dept. of Fish and Wildlife Stream Surveys

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Table III-8
ANADROMOUS FISH SPAWNING PRODUCTION

Fish Species and Stream System	Miles of Natinal Forest Spawning & Rearing Streams	Estimated 1984 Situation					Estimated Situation With Full Escapement					Estimated Situation with Full Escapement & Habitat Enhancement				
		No. of Spawning Adults	Smolt to Ocean Survival		Catch of Fish		No. of Spawning Adults	Smolt to Ocean Survival		Catch of Fish		No. of Spawning Adults	Smolt to Ocean Survival		Catch of Fish	
			%	Fish	Fish	Lbs.		%	Fish	Fish	Lbs		%	Fish	Fish	Lbs.
Spring Chinook																
North Fork John Day	10	300	2.5	1,200	900	13,500	426	4.0	2,726	2,045	30,672	852	4.0	5,453	4,090	61,346
Upper Grande Ronde & above Rondowa	74	395	.4	340	226	3,390	1,897	4.0	16,314	10,767	161,505	2,617	4.0	22,506	14,854	222,810
Imnaha	95	300	.4	258	170	2,550	3,000	4.0	25,800	17,028	255,420	3,000	4.0	25,800	17,028	255,420
Fall Chinook																
Snake River	71	500	.4	430	284	5,680	-------- UNKNOWN -------					------------UNKNOWN ------------				
Summer Steelhead																
North Fork John Day	46.2	600	2.0	1,800	1,200	9,600	900	6.0	8,100	5,346	42,768	2,394	6.0	21,546	14,220	113,763
Imnaha River	206.9	1,000	1.0	1,800	900	7,200	5,680	4.0	40,896	20,448	163,584	5,680	4.0	40,896	20,448	163,584
Snake River	91.4	3,000	1.0	5,400	2,700	21,600	17,040	4.0	122,688	61,344	490,752	17,040	4.0	122,688	61,344	490,752
Grande Ronde	(434.0)															
Joseph Creek	135.0	418	1.0	752	334	2,672	2,708	4.0	19,497	8,657	69,255	4,077	4.0	29,354	12,916	103,328
Lower Grande Ronde below Rondowa	47.0	145	1.0	261	116	928	943	410	6,790	2,988	23,900	990	4.0	7,128	3,136	25,090
Wallowa	31.0	120	1.0	216	96	767	622	4.0	4,478	1,988	15,907	622	4.0	4,478	1,988	15,907
Minam	61.0	230	1.0	414	184	1,472	1,224	4.0	8,813	3,913	31,303	1,224	4.0	8,813	3,913	31,303
Upper Grande Ronde above Rondowa	160.0	500	1.0	900	400	3,197	3,763	4.0	27,094	11,921	95,369	4,666	4.0	33,595	14,782	118,256
Totals	778.5 (steelhead only)				7,510	72,556				146,445	1,380,435				168,719	1,101,559

Source: Oregon Department of Fish and Wildlife.

the Grande Ronde basin. The Forest is to continue to receive these funds for another five years. Where fish habitat has declined it is usually a result of livestock damage to riparian areas, loss of stream shade due to timber harvest and road construction, or increased sediment due to poor road drainage or location. The improvement work includes fencing and vegetation planting to increase shade and decrease water temperature. It also includes installation of instream structures to improve rearing water for young fish. The Umatilla Confederated Indian Tribes, the Nez Perce Indian Tribe, and the Oregon Department of Fish and Wildlife have been cooperators in the planning and improvement work.

Approximately 140 miles of spawning streams on the Forest within the Grande Ronde drainage have been identified as requiring some form of improvement work to bring them to near optimum condition. Existing estimates of benefits resulting from the planned work are subject to many variables and assumptions. However, with completion of all work and attainment of habitat objectives, it is projected that adult spawning steelhead could increase from the 1984 count of less than 1,000 to more than 9,000. Salmon could increase from less than 300 to nearly 2,000. These estimates include benefits from planned work on private land portions of the streams as well as on the National Forest.

Although a lower priority (stream conditions are generally better than in the Grande Ronde Drainage), there is additional improvement work needed on about 45 miles of steelhead and salmon spawning streams within the North Fork John Day drainage on the Wallowa-Whitman. That work will be planned and added to the Council's program and will complement the work being done on the Umatilla National Forest within the lower portions of that drainage.

Fire and Fuels Management

Fire, and its exclusion, have been significant factors in the development of plant communities on the Wallowa-Whitman. Prior to the arrival of European man, natural and Indian-caused fires burned at frequent intervals (3-25 years) in the grass and ponderosa pine types, and less frequently (100-300 years) in the mixed conifer stands. Stand replacement fires (fires that destroy the existing stand) occurred in lodgepole pine every 80-120 years after epidemic outbreaks of mountain pine beetle. Fire suppression activities during the past 50 years have dramatically affected the fire frequency. This tends to change the mix of tree species and increase the level of natural debris on the forest floor.

As the stand composition changes from the fire tolerant pine, Douglas-fir, and western larch to the less tolerant mixed conifer and true fir, the potential for fire damage increases greatly.

It is important to understand the differences between wildfire and fires which are prescribed by Forest managers to achieve specific resource objectives. Wildfires tend to occur at the hottest and driest times of the year, when Forest fuels are very dry and fires tend to burn intensely. The level of heat produced by wildfire often kills trees, destroys the vegetation protecting the soil, may destroy shallow roots, and frequently increases soil erosion and stream sedimentation. Wildlife may also be seriously affected through loss of cover, food, and snag habitat.

Conversely, when fire is the prescribed treatment for an area, it is permitted to burn only under tightly controlled conditions intended to protect soils and desirable vegetation.

Timber harvest activity has a major influence on the fire management program of the Wallowa-Whitman. It frequently adds to the amount of burnable material on the forest floor. Since most fires on the Forest are caused by lightning (70 percent of all fires during the 1970-84 period), opportunities to reduce ignitions are limited. A fuel treatment program is necessary to manage the fuel loading so that resource protection objectives are met. Prescribed burning, both underburning and broadcast burning clearcuts, has been increasing in use over the past five years, and is predicted to continue to increase into the future. During 1984, the Wallowa-Whitman prescribed burned approximately 5,000 acres.

A large part of the Wallowa-Whitman (583,000 acres) is in Federally designated wilderness. Fire has historically been suppressed within these areas like anywhere else on the Forest. This resulted in some unnatural fuel build-ups, gradual changes in the composition of the timber stands, and a higher probability of catastrophic wildfires. Since 1982, some lightning-caused fires have been allowed to burn within wilderness, under carefully monitored conditions. Under current management direction, it is possible for wilderness managers to start fires within wilderness where this will enhance wilderness values. Over time, this will result in a return to natural wilderness ecosystems where the signs of human activity are not apparent.

Land Status

There are nearly 319,000 acres of non-National Forest land within the proclaimed National Forest boundary. These include private lands, many of which are patented mining claims, lands managed by other Federal agencies, State lands, and land owned by counties and municipalities. Ownership changes occur through land exchange, fee purchase, and the use of scenic easements to acquire certain rights short of fee ownership.

In some instances, the Forest boundary is irregular due to varying ownerships. There are also scattered private lands within the Forest as well as isolated National Forest parcels surrounded by private lands. Because of these situations, there is a continuing need for adjustment to meet the needs of National Forest administration as well as for effective private land management. At present, the Forest is responding to proposals from adjacent and intermingled landowners and many acres have been exchanged in recent years. This has resulted in consolidating ownership of many lands to the benefit of both parties. A land adjustment plan has been prepared for the preferred alternative and is a part of the Forest Plan which accompanies this EIS.

Although most rights-of-way have been acquired, there is a continuing program for the acquisition of road and trail rights-of-way in order to ensure public access to National Forest lands.

Occasionally, it is in the public interest to purchase private lands or acquire them through condemnation. Substantial purchases, totalling 4,769 acres, were made within the Hells Canyon National Recreation Area after its creation. An additional 15,085 acres have been acquired through condemnation. The need for such purchases in future years will depend largely on the success of local counties in administering private land use regulations within the Hells Canyon National Recreation Area. Where it proves futile to gain landowner compliance with the private land use regulations, purchase of the lands by the Federal Government may be the only recourse.

The Forest is working with public agencies and private parties to achieve a more efficient pattern of land ownership. A land adjustment and acquisition plan serves as a basis for land adjustment.

Special Land Uses

The Forest provides lands for a wide variety of special uses by private individuals and public agencies. Such uses are authorized by special use provisions, mining laws, and withdrawal authority of agencies. The most common are those covered by special use permits. Examples are recreation residences, pastures, telephone lines, airport beacons, fences, tramways, cultivated areas, roads, dams, and cemeteries. There are currently approximately 380 permitted special uses on the Forest. These are summarized in Table III-9.

Special uses are periodically inspected to insure compliance with conditions of use and to evaluate appropriateness of continuing such use. Permittees paid $25,525 for the right to use National Forest lands for these purposes in 1980. As is true of all National Forest receipts, 25 percent was returned to the counties and 75 percent to the United States Treasury.

Table III-9
SUMMARY OF SPECIAL USES - 1985

Uses	Total Cases	Total Miles of Right-of-way	Total Acres Permitted Area
Boat dock & wharf	1	.0	.1
Organization camp	1	.0	2.0
Cabin (recreation)	7	.0	14.1
Recreation residence	43	.0	20.2
Resort	3	.0	65.2
Camp & picnic	2	.0	179.0
Target range	2	.0	39.9
Tramway	1	.0	7.0
Outfitting & guiding	63	.0	.0
Winter sports resort	1	.0	22.5
Ski slope, trail	1	20.1	243.3
Cultivation, hay production	3	.0	25.7
Pasture	27	.0	4,098.2
Nonrecreation residence	2	.0	24.0
Range facility	4	.0	40.1
Cemetery	1	.0	1.6
Solid waste disposal area	1	.0	.4
Community residence	3	.0	3.6
Service building	1	.0	.1
Camp (industrial)	1	.0	.2
Fish hatchery	1	.0	.4
Warehouse, storage yard	16	.0	18.2
Weighing station	1	.0	.2
Experimental, demonstration	1	.0	.1
Education center	1	.0	15.0
Airport, beacon	2	1.0	1.4
Class D road permit	13	13.6	14.9
Class E road permit	5	4.4	16.1
Powerline	20	80.3	547.9
Powerplant	1	.0	1.4
Buried powerline	1	1.9	3.2
Antenna system (receiving)	2	1.6	.8
Electronic site	33	.0	10.8
Telephone, telegraph	7	39.4	145.0
Telephone buried cable	4	145.2	57.8
Water transmission	55	233.3	263.5
Dam, reservoir	16	.0	463.6
Water diversion, weir	6	.2	3.5
Well spring, windmill	15	1.0	4.9
Stock water	1	.0	.7
System, supply	4	.3	.9

Transportation and Utility Corridors

The Forest includes existing and proposed utility and transportation corridors totalling approximately 6,600 acres. These lands are set aside for oil and gas pipelines, and for power lines. A major corridor exists along Interstate Highway 84 and numerous other utility lines are found across the Forest (see Figure III-9).

Within these corridors opportunities for recreation, livestock grazing, timber management, mineral extractions and other uses are provided to the extent that they are compatible with the primary use.

Often it is necessary to prevent timber from reoccupying the corridor. The corridors which are kept free of tree growth provide increased forage for game and domestic livestock though the acreage is too small to significantly affect total forage production from the Forest. Keeping these corridors free of trees requires use of herbicides or mechanical means to control encroaching seedlings. Recreational use, such as hunting, often occurs in these corridors although many recreationists find the corridors visually unappealing.

Construction of new utility facilities is not permitted within wilderness. The Comprehensive Management Plan for the Hells Canyon National Recreation Area discourages new construction within the NRA and suggests that existing facilities be removed as opportunities to do so arise.

As part of this planning process three classes of land are to be identified: exclusion areas (areas where new utility corridor development will not be permitted), avoidance areas (areas with high resource values which are in conflict with utility corridor facilities and which are used only if no other choices exist) and other lands.

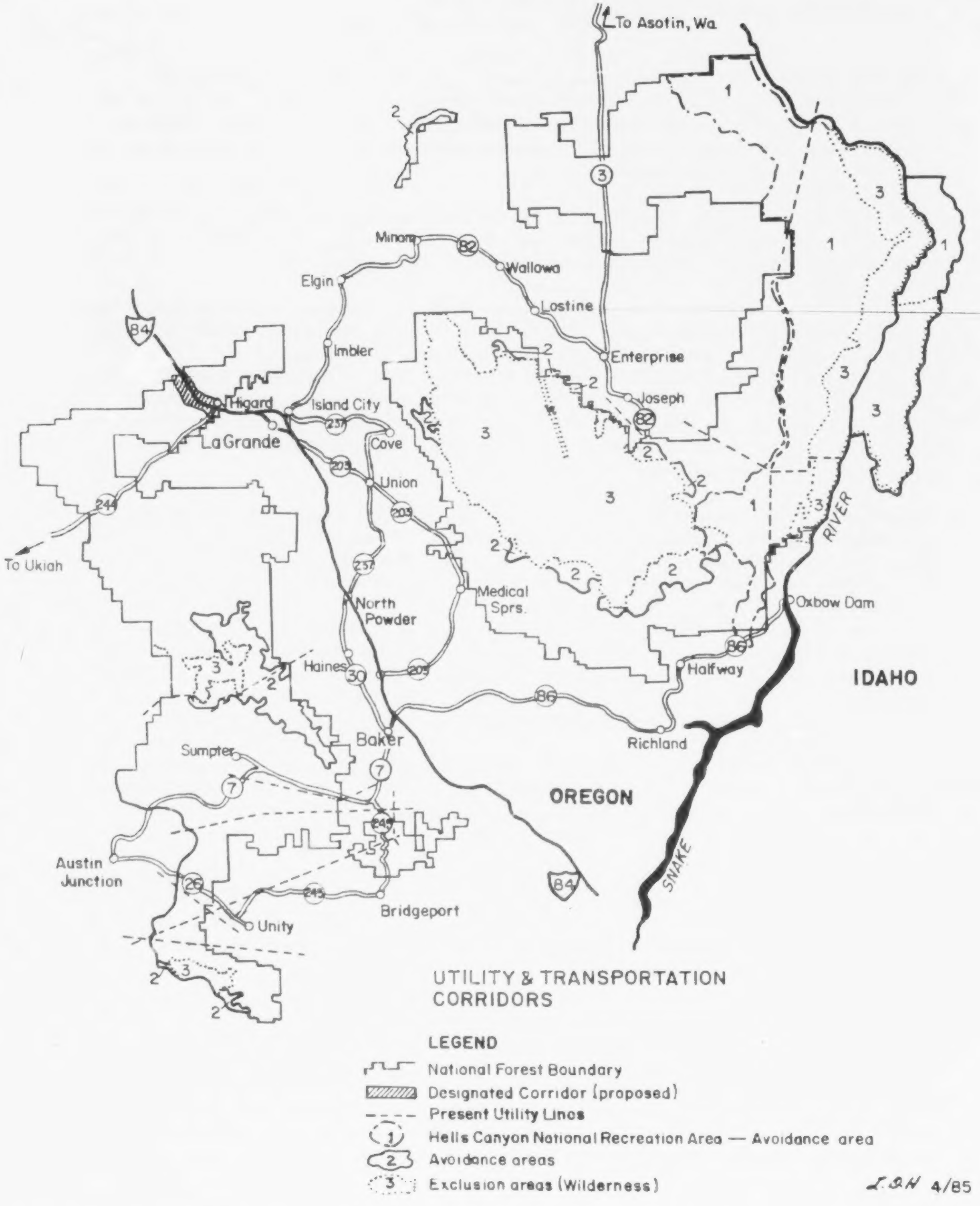
Exclusion areas include wilderness; wild, scenic, and recreational rivers and research natural areas. Avoidance areas include developed recreation sites, and areas managed to retain an undeveloped appearance. Both avoidance and exclusion areas vary by alternative.

Human Environment

Area of Influence

The area of influence (the area in which almost all the social effects of Forest management are discernable) includes the Oregon counties of Baker, Union, and Wallowa (Tri-Counties). These three counties process 85 percent of the Forest's timber outputs and 95 percent of the Forest's area falls within their boundaries. Over half of their local school and road budgets are derived from National Forest receipts. Many local residents rely on Forest fuelwood for primary home heat.

Figure III-9


To Asotin, Wa.
To Ukiah
Minam
Elgin
Wallowa
Lostine
Enterprise
Joseph
Imbler
Hilgard
Island City
La Grande
Cove
Union
North Powder
Medical Sprs.
Haines
Baker
Sumpter
Austin Junction
Unity
Bridgeport
Richland
Halfway
Oxbow Dam
IDAHO
OREGON
SNAKE
RIVER
84
82
3
237
203
244
30
86
7
245
26
1
2
3
UTILITY & TRANSPORTATION CORRIDORS
LEGEND
National Forest Boundary
Designated Corridor (proposed)
Present Utility Lines
Hells Canyon National Recreation Area — Avoidance area
Avoidance areas
Exclusion areas (Wilderness)
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Information on present utility lines from Pacific Power & Light Company using data from the Western Regional Corridor Study of May 1980

Major employment comes from City, County, State, and Federal agencies; trade; lumber and wood products manufacturing; and agriculture. Small in population (47,328 in 1980), the Tri-Counties comprise an area of 5,297,920 acres separated by long distances (100 to 200 miles) from the nearest metropolitan area, Boise, Idaho. For a more complete description of the local area see Appendix B.

Out-of-Area Recreationists

Within the Forest boundaries are a National Recreation Area, four Congressionally-mandated wildernesses, well-established alpine and Nordic skiing opportunities, large big-game herds, and substantial opportunities for cutting fuelwood. These give rise to a great deal of recreation use by those from outside the immediate area. Big-game hunters, float and jet boat users, campers, skiers, and wood gatherers comprise the great bulk of this group. Most of the big-game hunters are from other parts of Oregon. Campers and other general recreationists are also heavy users of the Forest, but share a more generalized Oregon, Washington, Idaho base.

Native Americans

Certain rights and privileges are afforded members of the Nez Perce Tribe and Umatilla Confederated Tribes by virtue of past treaties. These treaties entitle them to hunt, fish, gather roots and berries, and pasture stock on certain nonclaimed lands (ceded lands). Their rights to believe, express, and exercise their traditional religions (including having access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites) are also protected by law. Contacts were made with members of the Nez Perce and Umatilla Confederated Tribes to coordinate the Forest planning effort with tribal planning and management programs. Tribal plans have been reviewed and consultation with tribes is an ongoing process.

Because much of their culture and the practice of their religion is related to sites often known only to certain Indian families, site disturbance is of concern both to Forest Managers and the tribes. Figure III-10 is a map showing approximate boundaries of ceded lands.

Minorities and Women

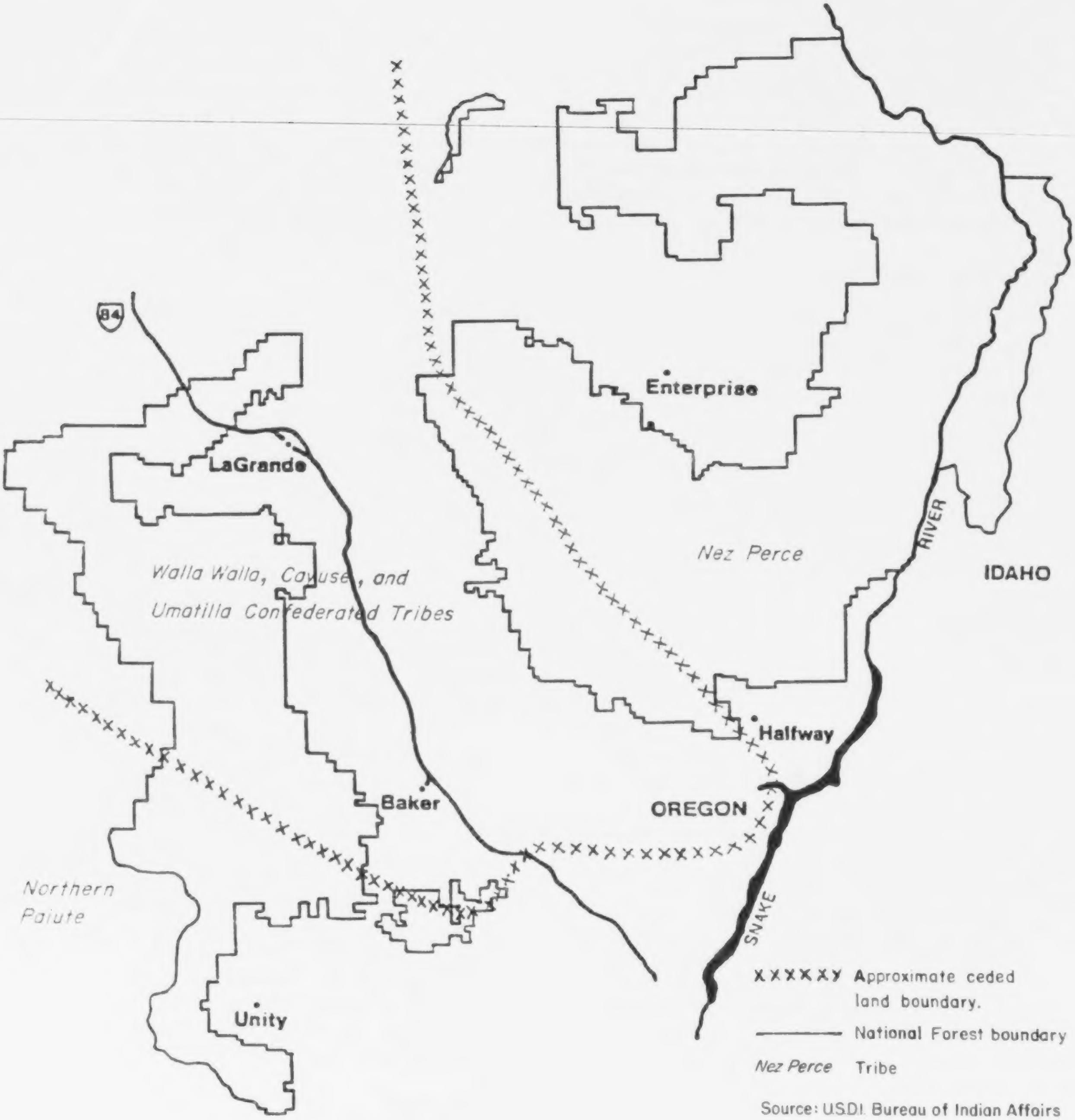
Various programs have been implemented on the Forest to focus the resources of these group members on Forest activities to the benefit of both the Forest and the individuals. This effort is reflected in Forest Service hiring, supervisory, and contracting procedures. Under authority of a number of civil rights and equal employment opportunity acts, executive orders and Title X of the 1978 Civil Service Reform Act (EEO Recruitment Plan), the Forest maintains, and intends to continue:

- Affirmative action in hiring minorities and women in nontraditional positions to meet the long-range Forest Service goals of being at parity with the National work force by 1990 and to have women and minorities distributed equally throughout the workforce by 2020.

- Eradication of all forms of discrimination from facilities, programs, activities, and contracting and hiring procedures.

Figure III - 10

CEDED TRIBAL TREATY LANDS
(TREATIES OF 1855)


84
LaGrande
Enterprise
Nez Perce
Walla Walla, Cayuse, and
Umatilla Confederated Tribes
IDAHO
RIVER
Halfway
Baker
OREGON
Northern
Paiute
SNAKE
Unity
XXXXXX Approximate ceded land boundary.
National Forest boundary
Nez Perce Tribe

Source: U.S.D.I. Bureau of Indian Affairs

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- Positive action in helping to provide developmental opportunities for handicapped, minorities, women and all other employees.
- Providing an Equal Employment Opportunity counselor and coordinators for the EEO, Federal Women's, and Hispanic programs.
- Representation of this Forest on the Regional Civil Rights Action Group.
- Civil rights training for all employees.

Human Resource Programs

The Forest has historically participated in various human resource programs including the Comprehensive Employment and Training Act (CETA), Youth Conservation Corps (YCC), Young Adult Conservation Corps (YACC), Senior Community Services Employment Program (SCSEP) and the Job Training Partnership Act (JTPA).

These programs all provide work and training for participants and benefit various Forest resources through such activities as campground construction and maintenance, trail maintenance, tree planting and clerical work.

Human resource programs fluctuate with the political-economic climate. During periods of high unemployment or the presence of an administration supportive of the programs' philosophy, funding for human resource programs often increases. Since the Forest can provide work in both urban and rural areas, agencies responsible for administering these programs look to the Forest to host them. The only influence the Forest has in securing these programs is that which results from its past performance on similar programs. Ultimately its participation is determined by other government agencies.

For the past few years an important facet of the human resource program has been the use of volunteers. Volunteers have accomplished much work which due to reduced budgets, otherwise would not have been accomplished. In 1984 volunteer work totalled 11.7 person-years with an estimated value of $195,000.

State and County Planning

Coordination with local planning within Idaho counties was accomplished through development of the Comprehensive Management Plan for the Hells Canyon National Recreation Area which the Forest Plan will adopt.

City and county comprehensive management plans in Oregon are designed to carry out State-wide planning goals. A purpose of the plans is also to incorporate the plans and programs of the various governmental units into a single management tool for the planning area. The State governmental body responsible for reviewing county comprehensive plans is the Oregon Land Conservation and Development Commission.

County plans recognize the National Forest as "Primary Forest," "timber grazing" or similar designation. Although counties do not have responsibility for regulating use on Federal lands, the Forest Service and county governments coordinate planning efforts to avoid conflicts. The alternatives discussed in this EIS are generally compatible with local governmental plans (see further discussion in Chapter IV).

Following are the pertinent State-wide planning goals (paraphrased) to which county plans must adhere (State of Oregon 1980):

Goal No. 1: "To provide for citizen involvement in planning."

Goal No. 2: "To establish a planning process and policy framework."

Goal No. 3: "To preserve agricultural lands."

Goal No. 4: "To conserve forest lands for forest uses."

Goal No. 5: "To conserve open space and protect natural and scenic resources."

Goal No. 6: "To maintain and improve the quality of air, water, and land resources in the State."

Goal No. 7: "To protect life and property from natural disasters and hazards."

Goal No. 8: "To satisfy the recreational needs of the citizens of the State and visitors."

Goal No. 9: "To diversify and improve the economy of the State."

Goal No. 10: "To provide for the housing needs of citizens of the State."

Goal No. 11: "To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development."

Goal No. 12: "To provide and encourage a safe, convenient and economic transportation system."

Goal No. 13: "To conserve energy."

Goal No. 15: "To provide for an orderly and efficient transition from rural to urban land use."

Cultural Resources

The cultural resource program was developed as a result of public interest in protection of nonrenewable National heritage resources. In the Pacific Northwest Region, the program is a formal effort to organize the stewardship of the extensive, nonurban cultural heritage resource base.

The management of cultural resources benefits the public by protecting and providing knowledge of past lifeways. Public participation in the form of visitor days has not been measured, but some part of recreation visitation relates to heritage sites.

The cultural resource base of the Wallowa-Whitman National Forest includes a diverse range of historic and prehistoric artifacts and sites. These include (1) historic cabins, trails, mines and related flumes, adits, ditches and other structures, railroad grades, immigrant roads, mills, and homesteads; (2) historic Forest Service structures including guard stations, lookout towers, corrals, camps, administrative centers, and CCC campgrounds and buildings; (3) prehistoric (Native American) campsites, villages, graves, quarries, workshops, trails, caves, shelters, and religious sites. All of these have historic and cultural value to the general public as well as research value for the scientific community.

One important cultural feature on the Forest is the Blue Mountain segment of the Oregon Trail. This trail, which spans the 2000 miles from Independence, Missouri to Oregon City, Oregon, contributed significantly to the settlement of the Pacific Northwest during the period 1841-1848. It was designated as a National Historic Trail in 1970.

The Blue Mountain segment of the trail is 16 miles in length, of which six miles are on National Forest lands with the remainder being on private lands. This segment contains some of the best remaining examples of intact trail. The Forest is the lead agency for managing this segment and has developed a management plan to assure that its historic value is preserved.

Key concepts of cultural resource management are the inventory and evaluation of all resources. The major goals are the protection and enhancement of all eligible resources for the advancement of public knowledge and enjoyment. Cultural resource management is guided by statutes and their implementing regulations as well as Forest Service policy expressed in the Forest Service manuals.

Protection of cultural resources is a major consideration in many Forest management activities. Road construction, timber sales, mining, water development for livestock and recreation site development are some of the more common types of activities which can affect cultural resources. Prior to implementing these and similar ground-disturbing activities, an inventory is conducted to identify sites of cultural value. In most cases activities are designed to avoid the identified cultural sites, but in some cases other mitigative steps are taken such as collecting the artifacts found and recording the significant information associated with them. All such activities are coordinated with the State Historic Preservation Officer for the State in which the site is found.

An overview of historical and archaeological resources for the Forest (excluding Hells Canyon NRA) was completed in 1978. The Hells Canyon NRA historical overview was also completed in 1978. The archaeological overview for the NRA is still underway.

Since the completion of the overview, some 800,000 acres on the Forest have been surveyed for cultural resources (through 1984). Over 4,400 cultural resource sites were found and recorded during this process.

Landscape Appearance

Much of the Forest retains a natural or nearly natural appearance. Past land management activities have not extensively disturbed this resource except where recent clearcutting of dead and dying lodgepole pine timber has taken place. Those activities which result in modification to the landscape include clearcutting, creation of utility corridors, and loss of vegetation due to tailing piles from mining operations. To date, approximately 126,000 acres of National Forest have been impacted by these activities. Following regrowth, clearcuts will eventually return to a natural-appearing condition. Utility corridors and mine tailings, however, are long-term modifications. Maintaining high visual quality tends to reduce timber harvest levels, and increase timber management and road construction costs. Since maintaining a high level of visual quality often requires retention of large trees and snags, benefits to some species of wildlife are significant.

The visual resource has been inventoried according to the National Forest Visual Management System. This provides an inventory of the existing visual condition as well as identifying visual quality objectives (see Table IV-5). Current land management direction from Unit Plans requires that these objectives be met to the extent practical in all management activities. Forest Plan alternatives analyze two options: (1) meeting these objectives and (2) reducing visual quality objectives in favor of other resource uses.

The inventory system divides the Forest into several categories based on variety class, sensitivity level, and distance zone (Clark and Stankey 1979). Through combining these characteristics, visual quality objectives are identified (see Appendix K).

Variety classes are obtained by classifying the landscape into different degrees of variety. This determines those landscapes which are most important and those which are of lesser value from the standpoint of scenic quality. Class A is distinctive. It refers to those areas where features of land form, vegetative patterns, water forms, and rock formations are of unusual or outstanding visual quality. Class B is common. It refers to those areas where features contain variety in form, line, color and texture, or combinations thereof, but which tend to be common throughout areas whose features have little change in form, line, color, or texture.

Sensitivity levels are a measure of the people's concern for the scenic quality of National Forests. Level 1 is highest sensitivity, Level 2 is average sensitivity, and Level 3 is lowest sensitivity. Sensitivity Level 1 and Sensitivity Level 2 travel routes on the Wallowa-Whitman are listed in Appendix K and are displayed in the map packet accompanying this DEIS. Distance zones are divisions of a particular landscape being viewed. Foreground (fg) is limited to those distances at which details can normally be perceived. Normally, in foreground views, the individual boughs of trees form texture. Foreground is usually limited to areas within one-quarter to one-half mile of the observer. Middleground (mg) extends from foreground zone to three to five miles from the observer. Texture is normally characterized by masses of trees in stands of uniform tree cover. Background (bg) extends from middleground to infinity. Texture in stands of uniform tree cover is generally weak or nonexistent.

The quality objectives are preservation (P), retention (R), partial retention (PR), modification (M), and maximum modification (MM). Preservation is the visual quality objective assigned to all existing and recommended wilderness. The retention visual quality objective provides for management activities which are not visually evident. Partial retention visual quality objectives provide for management activities that remain visually subordinate to the characteristic landscape. Modification allows management activities to be visually dominant, but natural in appearance even when viewed as foreground or middleground within the surrounding area. The maximum modification quality objective allows management activities of vegetative and land form alterations to dominate the characteristic landscape. However, when viewed as background the visual characteristics must be those of natural occurrences within the surrounding area.

Recreation

The Forest offers a wide range of outdoor recreation opportunities varying from primitive hiking and horseback riding within the wilderness areas to the relatively developed atmosphere found at Anthony Lakes, Phillips Lake, and a number of other recreation sites. Although recreation is concentrated in the late spring, summer, and fall when most of the Forest is accessible by wheeled vehicle, opportunities for winter recreation are abundant for those interested in downhill or cross-country skiing, snowshoeing, or snowmobiling.

The Forest includes the Eagle Cap and Hells Canyon Wildernesses as well as portions of the Monument Rock and North Fork John day Wildernesses; the Hells Canyon National Recreation Area; Wild and Scenic River sections along the Snake River, totaling 68 miles; 45 developed recreation sites, including 30 campgrounds; and three National Recreation Trails. During the 1980-1984 period, recreation use averaged 1,511,000 recreation visitor days (RVD's) per year. Closely tied to population projections, recreation use is expected to show a continual increase for the foreseeable future.

Recreation Opportunity Spectrum

Recreation opportunity on the Forest has been classified under the Recreation Opportunity Spectrum (ROS) (Clark and Stankey 1979). ROS is a classification of land according to a producible range of recreation experiences. The six spectrum classes of recreation situations a visitor can experience vary from an undisturbed, natural environment with little or no contact with other humans, to a highly modified, altered environment with many contacts with others. The current Forest capacity and use by ROS class is shown in Table III-10. (A more detailed definition of the Recreation Opportunity Spectrum is found in the Glossary.)

Developed Recreation

Developed recreation opportunities are found in campgrounds, picnic areas, boat launching sites, resorts, recreation homes, winter sport sites, and other constructed facilities. Developed recreation sites occur on relatively small amounts of the Forest land area, totalling approximately 3,900 acres. In recent years, developed recreation use accounted for 24 percent of the public recreation visitor days or 367,000 RVD's, with camping being the single largest use. If present trends continue, overall developed recreation use would exceed the Forest's capacity by year 2025 and beyond. The capacity of existing developed recreation sites is 503,000 RVD's while demand is expected to be 635,000 RVD's by the year 2025.

The Comprehensive Management Plan for the Hells Canyon National Recreation Area calls for construction of a number of additional recreation sites including campgrounds at Pittsburg Landing, the Upper Imnaha River area, Hells Canyon Reservoir, Dug Bar, near Hat Point and Low Saddle, and in the vicinity of Seven Devils Guard Station. Congress authorized expenditure of funds for this purpose at the time the National Recreation Area was established. This is expected to increase developed recreation capacity by approximately 78,000 RVD's.

Since developed recreation sites occupy such a small portion of the Forest, their effects on other resources are usually minor. Trampling of vegetation and compaction of soils occur at heavily used sites. Recreation sites near water tend to contribute to bacterial pollution. Some recreation sites are withdrawn from mineral entry but this has not proven to be a problem since no significant mineralization is known to occur at existing or proposed recreation sites. The timber on developed recreation sites is not available for scheduled timber harvest.

Recently, local private interests have begun restoring a portion of the historic Sumpter Valley Railroad. Nationally recognized for its historic significance (it is a listed National Register District), this narrow-gauge railroad first served the Sumpter area in 1896, providing the main link between the sawmills in Baker and the extensive stands of ponderosa pine found in Sumpter Valley and surrounding mountains. Known as the "Stump Dodger" this train contributed significantly to the mining-related boom town development of Sumpter in the early 1900's. A section of track through Sumpter Valley has been reconstructed and train rides are available to the public.

Dispersed Recreation

Dispersed recreation opportunities occur on most Forest lands and include a diversity of activities. Average use for the period 1980-1984 shows approximately 1,144,000 RVD's per year or 76 percent of the total recreation use on the Forest. The major activities in descending order of use are: camping, motorized travel, hunting, fishing, riding, hiking, and mountain climbing. Many dispersed recreation activities require developed sites such as parking lots, trailheads, and boat launching sites for support and access.

The estimated dispersed recreation capacity on the Forest is 7,078,800 RVD's annually. If present use trends continued, and ROS classification did not change, there would be adequate capacity in all ROS classes to provide for projected use through the year 2025. However, if roading of unroaded areas continues, shortages may develop in the semiprimitive classes. There is adequate roaded capacity to meet demand well beyond the year 2025. Retaining semiprimitive recreation opportunities (by leaving roadless areas undeveloped) makes access for minerals and livestock management more difficult and precludes scheduled timber harvest.

A principal recreation use conflict exists between motorized use and habitat for elk. Studies have shown that elk tend to avoid areas near motor vehicle travel routes (Perry and Overly 1977, Leege 1976, Thiessen 1976). Some trails and low standard roads have been closed to motorized use for this reason. Logging road development has eliminated other primitive motorized travel routes. Thus, opportunities for off-road vehicle travel are decreasing and appear likely to decrease further.

Off Road Vehicles

Off-road vehicle use is managed through the Forest Travel Management Plan, which is subject to annual review and revised when appropriate to do so. Off-road vehicle use is monitored and emergency changes in the plan are made as dictated by the results of monitoring.

The current plan, effective September 1, 1985, provides the following:

	Open to Motorized Use		
	Seasonally	Yearlong	Closed
National Forest Acres	431,400	1,131,400	821,400
Roads (Miles)	1,323	4,689	3,177
Trails (Miles)	139	269	1,337

The open road mileage includes an estimated 1,000 miles of low-standard routes suited primarily for four-wheel drive vehicles, trail motorcycles, and all-terrain vehicles. The "closed" roads are mostly physically closed (impassable).

Wilderness

The Forest contains two wildernesses, plus a portion of two others, totaling 582,700 acres (see Figure III-11). Wilderness acreage, present use, capacity, and predicted use at the year 2025 are shown in Table III-10. See the individual wilderness management plans in the proposed Forest Plan accompanying this DEIS.

Table III-10
CURRENT FOREST CAPACITY AND USE BY RECREATION OPPORTUNITY SPECTRUM CLASS (RECREATION VISITOR DAYS)

ROS Class	Acres	Current 1/ Capacity (RVD'S)	Current Use (RVD's)	Projected Demand (RVD's)			
				1991-2000	2001-2010	2011-2020	2021-2030
Nonwilderness							
Rural	1,500	172,700	106,000	136,000	156,000	174,000 2/	187,000 2/
Roaded Modified	242,100	1,209,800	887,000	1,139,000	1,307,000	1,456,000	1,568,000
Roaded Natural	985,600	4,925,000	4/	4/	4/	4/	4/
Semiprimitive Motorized	260,200	573,700	268,000	344,000	395,000	440,000	474,000
Semiprimitive Nonmotorized	269,000	322,800	122,000	157,000	180,000	200,000	216,000
Primitive	8,155	7,000	6,000	8,000 3/	9,000 3/	30,000 3/	11,000 3/
Subtotal	1,766,515	7,211,000	1,389,000	1,784,000	2,047,000	2,280,000	2,456,000
Wilderness							
Primitive (Trailed)	511,000	212,900	30,300	36,000	43,000	47,000	53,000
Semiprimitive	71,700	157,900	91,700	116,000	131,000	143,000	159,000 3/
Subtotal	582,700	370,800	122,000	152,000	174,000	190,000	212,000
Total	2,349,215	7,581,800	1,511,000	1,936,000	2,221,000	2,470,000	2,668,000

1/ Under current land management plans, capacity for semiprimitive recreation will decrease and capacity for roaded recreation will increase as existing roadless areas are developed.
2/ Demand for developed recreation within the rural ROS class will exceed capacity by 2020. There is adequate developed recreation capacity within other ROS classes to make up for this shortfall.
3/ Unsatisfied demand is expected to be met within wilderness.
4/ Not differentiated from roaded modified.

The Eagle Cap Wilderness was created in 1940. Subsequent legislation added to the original acreage in 1972. The Hells Canyon Wilderness was established as part of the Hells Canyon National Recreation Area legislation in 1975.

With the passage of the Oregon Wilderness Act of 1984, the two existing wildernesses on the Wallowa-Whitman (Eagle Cap and Hells Canyon) were expanded and two new wildernesses were established, each of which lies partially on the Forest. They are the Monument Rock, which extends onto the Malheur National Forest, and the North Fork John Day, which lies primarily on the Umatilla National Forest with one unit, Baldy Creek, entirely on the Wallowa-Whitman.

With the 1984 wilderness additions, most of the primitive and about 70 percent of the semiprimitive areas are located in wilderness. If present trends continue, the primitive and semiprimitive acreage outside of wilderness will shrink and those individuals seeking these kinds of recreational experiences will be more and more drawn to wilderness. However, if present use trends continue, there will be adequate capacity available to meet demand until beyond the year 2025.

The Eagle Cap Wilderness totals 346,000 acres in the Wallowa Mountains. it includes the Matterhorn, the highest peak in eastern Oregon. Included within the wilderness are 73 lakes, 55 of which contain fish. Fish within these lakes are the result of a fish stocking program which began in some lakes as early as 1917 and continues today under the direction of the Oregon Department of Fish and Wildlife.

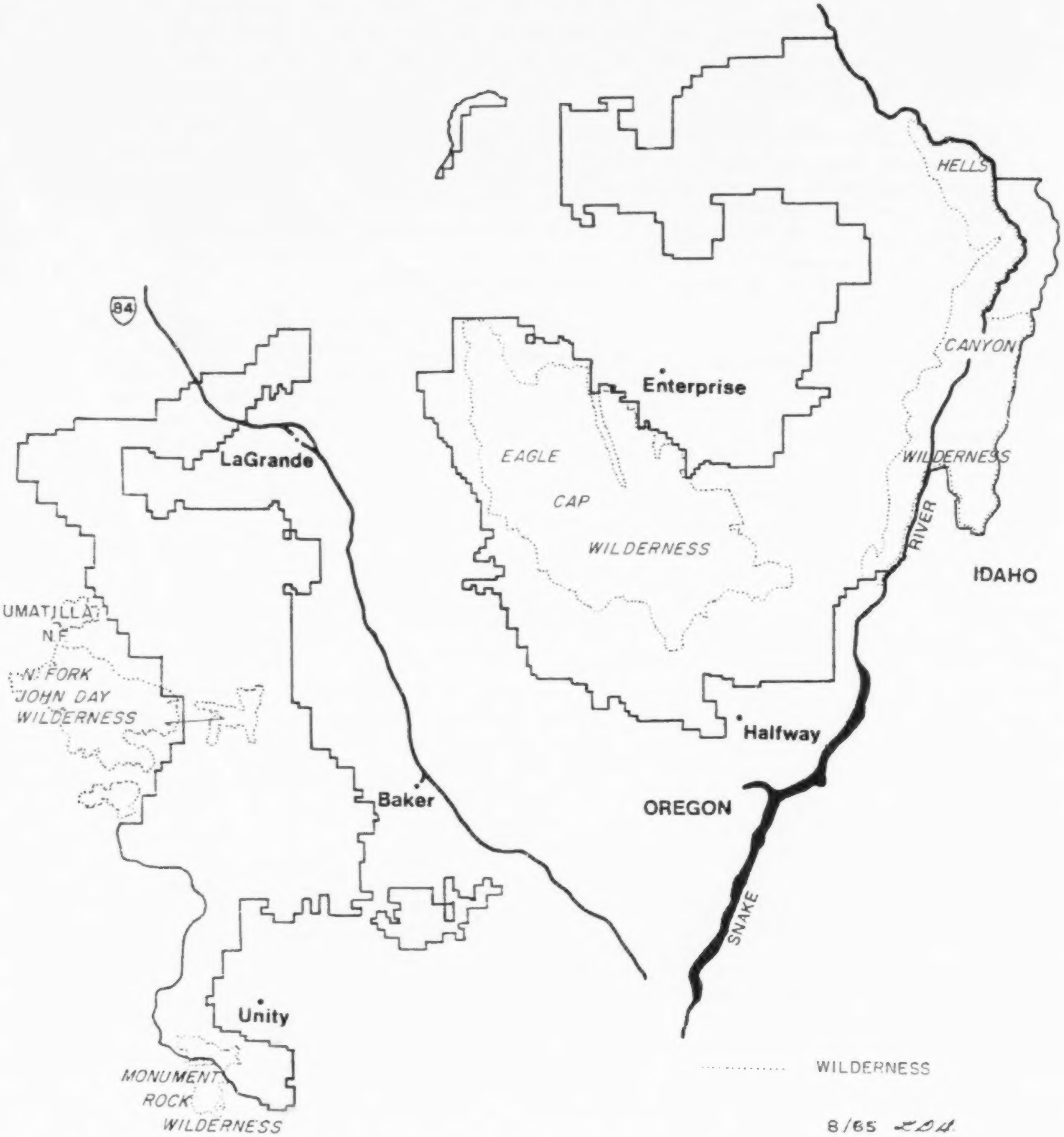
Use within the Eagle Cap Wilderness tends to concentrate near lakes, particularly in the Lakes Basin. The Lakes Basin area is a concentration of scenic lakes surrounded by numerous high peaks. Easily accessible from the Lostine River trailhead, it is the most used portion of the wilderness. This use has caused localized trampling around the lakes and adjacent campsites. Other portions of the wilderness receive substantially less use.

Major portions of the wilderness are in domestic livestock allotments and are grazed by sheep and cattle during mid to late summer. The continuation of grazing is provided for in the Wilderness Act. Recreational visitors who encounter recently-grazed areas are frequently offended by the aftereffects. However, the effects are temporary in nature and little evidence can be found a few months later. Visitors who inqure will find there are many opportunities to avoid active grazing areas.

The area has an extensive trail system that provides access by foot and horse to most places. Even so, the size of the wilderness assures many opportunities for a primitive, remote recreation experience. Some trails need relocation or reconstruction to meet wilderness management objectives or make maintenance feasible.

Figure III-11

EXISTING WILDERNESS


84
Enterprise
LaGrande
EAGLE
CAP
WILDERNESS
HELLS
CANYON
WILDERNESS
RIVER
IDAHO
UMATILLA
N.F.
N. FORK
JOHN DAY
WILDERNESS
Halfway
Baker
OREGON
SNAKE
Unity
MONUMENT
ROCK
WILDERNESS
WILDERNESS
8/85 LDA
MALHEUR N.F.

The 214,000-acre Hells Canyon Wilderness is located almost entirely within the Hells Canyon National Recreation Area. Split by the Snake River Corridor, the wilderness includes the west face of Hells Canyon in Oregon and parts of the east face of Hells Canyon and the Seven Devils Mountains in Idaho. All of the 32 lakes are in Idaho. Of these, 31 contain fish as a result of fish stocking activities by the State of Idaho. The extreme variation in elevation, topography, and climate provide a unique wilderness character.

The trail system is a result of past ranching activity. It provides good access to much of the area, but the size and rugged nature of the wilderness assures excellent opportunities for solitude and primitive recreation. Some trials need relocation or reconstruction to meet wilderness management objectives or to facilitate maintenance.

The North Fork John Day Wilderness, totalling about 122,000 acres, is shared with the Umatilla National Forest to the west. The North Fork John Day, Tower, and Greenhorn units of the wilderness comprise 107,000 acres and are located almost entirely on the Umatilla National Forest. The 15,000-acre Baldy Creek Unit is located entirely on the Wallowa-Whitman National Forest and is separated from the main body of the wilderness by one and one-half miles of nonwilderness lands.

The area is known for its anadromous fishery with the main stem of the North Fork John Day River and its tributaries providing over 40 miles of steelhead and trout habitat.

The wilderness is highly mineralized and is rich in early mining sites including log cabins, wagon roads, tailings from placer mines, and mining ditches which date back to the mid-1800's. These draw people for recreational and historical pursuits, especially among local residents. Popular recreation uses also include deer and elk hunting.

The North Fork John Day River is under consideration for addition to the National Wild and Scenic Rivers System.

The area is heavily forested. Conifers common to the area include western larch, Douglas-fir, Engelmann spruce, lodgepole pine, subalpine fir and white fir.

The Monument Rock Wilderness is divided between the Malheur National Forest (12,700 acres) and the Wallowa-Whitman National Forest (7,300 acres), straddling the ridge between the Malheur River and Burnt River drainages. It is a mixture of open and timbered slopes.

The major recreational uses of the area are deer and elk hunting although hiking and backpacking are locally popular. Resident trout are found in the Little Malheur River and several smaller streams.

The Monument Rock Wilderness adjoins the Unity mineralized area (see Figure III-2) which has moderate potential for gold, copper, and molybdenum. The bulk of the mineralized area is outside the wilderness.

All wilderness meets air quality standards for Class I areas, except for brief periods when visibility is impaired by smoke from wildfires, nearby prescribed fires, or general smoke and smog moving through from western Oregon on a fast-moving weather front.

There is no primitive (trailless) wilderness land on the Wallowa-Whitman National Forest. The best opportunity for off-trail recreation experiences is in the Eagle Cap Wilderness. The Environmental Assessment for Interim Management of the Eagle Cap Wilderness, completed in 1982, identified four alternatives for management including one that would significantly decrease trail mileage and create a more primitive situation. However, it would not have resulted in large enough trailless areas to meet the primitive (trailless) criteria.

With a relatively low intensity of use, there are few conflicts between public use and maintenance of wilderness character. Some areas around lakes in the Eagle Cap Wilderness receive heavy use during July and August. Popular hunting areas are heavily used during October and November.

Wild and Scenic Rivers

In 1968 through an act of Congress (P. L. 90-542) the National Wild and Scenic Rivers System was created. The policy of United States, as established in the Act is "... that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."

The Act goes on to define three classes of rivers: wild, scenic, and recreational. Wild river areas are those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America. Scenic river areas are those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Recreational river areas are those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past. The act established many rivers throughout the county as members of the National Rivers System.

In 1975 P. L. 94-199, the act which established the Hells Canyon National Recreation Area, amended the Wild and Scenic Rivers Act to include the National Forest portions of the Snake and Rapid Rivers in the National System. To date, the Snake is the only stream within the administrative area of the Forest that is given this recognition. The Rapid River is administered by the Payette and Nezperce National Forests.

In 1980, the Heritage Conservation and Recreation Service (HCRS)* conducted an inventory of rivers to be considered for inclusion in the National Rivers System, in accordance with the Wild and Scenic Rivers Act of 1968. Table III-11 and Figure III-12 describe the inventoried and other eligible river segments on the Wallowa-Whitman National Forest. River segments which are not dominantly on National Forest land are not being considered in the analysis for the Forest Plan, but may be considered in some future analysis or by some other Government agency. These include: Joseph Creek from the Forest Boundary to its mouth, the Lostine River from the Forest boundary to its mouth, and the Minam River from the Forest boundary to its mouth. The Imnaha River, from its origin to its mouth is on the list of inventoried rivers but is not being considered in this analysis because its consideration would require changing the land allocations within the Hells Canyon National Recreation Area. National Forest management activities will retain existing river eligibility on the Imnaha until such an analysis is completed. Since stream courses within wildernesses are already protected, they are not being considered for wild, scenic, or recreation status at this time.

Addition to the Wild and Scenic River System affects other uses which can be made of the stream or river and the surrounding lands. When a river is added to the system, the addition includes a strip of land on each side, sufficient in size to protect the character of the river (but not to exceed a total of 320 acres per mile). Within this strip some activities are precluded or curtailed. Wild river segments are withdrawn from new mineral entry. Road construction, timber harvest, and other activities are restricted to retain or enhance the values for which the river was designated. Wild, scenic, or recreational designation precludes the construction of dams.

In general, the potential wild and scenic rivers on the Wallowa-Whitman conflict little with other resource uses. A major hydroelectric development was proposed on the Grande Ronde in 1982 but interest has since waned. Several sites for small power generating facilities have been identified but, to date, remoteness has made their development impractical. The area surrounding the headwaters of the North Powder River is mineralized and testing is still under way.

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*The HCRS has since been disbanded, with its responsibilities being assumed by the National Park Service.

Of the following candidate streams, the Lostine, Joseph Creek, North Fork John Day, and Grande Ronde are included in the National Park Service inventory. The North Powder and Eagle Creek were added as a result of Forest Planning public involvement activities. The suggestion to include them came from the Oregon Natural Resources Council (see Chapter II, Alternatives Proposed by other Groups and see Appendix I for further information).

Lostine River

Originating in the heart of the Wallowa Mountains (Eagle Cap Wilderness) near Minam Lake, the Lostine River runs north-northwest some 30 miles until it enters the Wallowa River after crossing 11 miles of private land.

From the origin to Two Pan trailhead, approximately four miles, the river is within the wilderness. A well used trail follows the river along this portion. From Two Pan Campground to where it exits the Forest, the centerline of the stream forms the wilderness boundary. During this 15 mile stretch a gravel surfaced road parallels the stream, providing access to the river, recreational sites and a trailhead.

From the origin to where it leaves the Forest the river drops some 3,200 feet. It makes its way rapidly to the north, creating numerous rapids and small waterfalls. The walls of the deep glaciated, steep-sided canyon tower some two to three thousand feet over the river visitor. The canyon walls are an interesting mixture of shape and color provided by vegetation and rock outcrops. In their Nationwide Rivers Inventory, the National Park Service notes that the Lostine River is "an exceptionally clear, straight stream flowing through excellent example of glaciated u-shaped valley."

The stream averages 175 cubic feet per second flow. It is not suited for boating but is a popular fishing stream. Steelhead and chinook salmon use this stream for spawning.

Having long been recognized for its recreation value, the trees along the stream have not been considered in calculating the timber harvest level for the Forest. Mineral potential is low. There are approximately 100 acres of private land within the potential Wild and Scenic River Corridor.

Where the river is entirely within the wilderness, it is eligible for wild river status. Where it forms the boundary of the wilderness, it is eligible only for recreational river status due to the paralleling road and recreational developments.

Eagle Creek

Eagle Creek originates at Eagle Lake in the Eagle Cap Wilderness and runs southwest four miles to where it leaves the wilderness. Thence it continues southwesterly approximately six miles to where it turns southeast, eventually leaving the Forest 22 miles from its origin.

The stream was not inventoried by the National Park Service. It is an exceptionally clear stream with a great deal of variety, meandering through attractive meadow lands or rushing through rock strewn canyons. Large ponderosa pine and high cliffs contribute to its scenic beauty. The mean annual flow of the stream is 325 cubic feet per second.

The stream corridor is a popular recreational area and the stream provides good trout angling. It is not used by anadromous fish.

Most of the potential corridor outside wilderness is roaded. A scattering of private lands, some containing cabins, flank about 6 miles of the stream within the Forest. Roads and other developments along the stream make it eligible only for recreational status in the National Wild and Scenic River System.

Joseph Creek

Chesnimnus and Crow Creek combine to form Joseph Creek near the Crow Creek Bridge, 20 miles north of Enterprise. Thereafter this stream meanders northerly through a very deep canyon to the Forest boundary, about 17 miles from the origin.

From Crow Creek Bridge to the Joseph Creek Ranch, six miles, a road follows the stream. Thereafter, the road becomes a jeep trail, also paralleling the creek. Private land occupies the corridor and streambottom for more than half of its length within the National Forest boundary.

While on the Forest the potential corridor provides a prominent example of the rugged canyon country of northeast Oregon. The canyon walls are an alternating mixture of steep, grassy slopes, scattered patches of trees and rimrocks. The canyon is named for Chief Joseph, famous Nez Perce Indian tribal leader (see Joseph Canyon Roadless Area, Appendix C).

Although a relatively small stream (mean annual runoff 46 cubic feet per second) Joseph Creek provides trout fishing and is an anadromous fish stream. The stream and its environs are popular for hiking, horseback riding and big-game hunting.

North Fork John Day River

The North Fork John Day originates on the northeast slopes of Columbia Hill, a peak of the Elkhorn Mountain Range within the North Fork John Day Wilderness. After three miles the stream leaves the wilderness at Peavy Cabin, a local landmark, and reenters the wilderness near the North Fork John Day Campground.

The river is noted by the National Park Service in its Nationwide Rivers Inventory of Natural and Free-Flowing Rivers as a "long undeveloped portion of major river system. Still accessible to anadromous fish--potential steelhead and salmon resource. Highly scenic canyon region." This commentary does not refer to the seven mile stretch between Peavy Cabin and the North Fork John Day Campground, however. Along this portion a paved road parallels the stream, well within the potential wild and scenic river corridor, for about five miles. This area also includes evidence of timber harvest and other roads. These factors make the stream ineligible for wild or scenic river status but it is eligible for recreational designation.

Mean annual flow within this nonwilderness portion of the stream is 18 cubic feet per second. It is not suitable for boating but is a popular camping area for fishermen and others who use the North Fork John Day Campground or undeveloped campsites along the stream.

While anadromous fish from all other streams that originate on the Wallowa-Whitman National Forest must pass through eight dams on the Snake or Columbia Rivers, fish from the North Fork John Day have only to contend with the lower three dams on the Columbia. This makes it a highly important stream for chinook salmon and steelhead trout.

North Powder River

North Fork of the Powder River, known as the North Powder, originates from several springs and small lakes within the Elkhorn Range. It runs easterly to where it leaves the Forest some six miles from the point of origin. Thereafter it remains on private land, eventually entering the main stem of the Powder River near the town of North Powder.

The National Forest portion of the stream lies within a picturesque glaciated valley. The streambottoms and most of the potential wild and scenic river corridor are heavily timbered. To the north, Twin Mountain towers over the stream corridor, and Red Mountain dominates the southern flank of the canyon.

A jeep road lies along the stream, occupying what was once a stage route from North Powder to the mining town of Bourne. Unobstrusive stumps, evidence of historic mining and nearby ranching development, are scattered along the streambottom. Evidence of fuelwood cutting in the lower portion of the area is also noticeable. For the most part, the potential corridor retains a primitive appearance. It is considered eligible for wild, scenic or recreational status.

Having a small drainage basin, the North Powder has a mean annual flow of 12 cubic feet per second. It is locally popular for picnicking, camping, hunting, and trout fishing. The stream is not suitable for boating and is not an anadromous fish stream.

Grande Ronde River

The Grande Ronde River flows through National Forest land from two miles north of the settlement of Rondowa to one-half mile downstream from the mouth of Grossman Creek, a distance of approximately 18 miles. During this distance, the river forms the boundary between the Umatilla and Wallowa-Whitman National Forests. This description deals primarily with this 18-mile section. Of the 18 miles, slightly more than one mile is in private ownership and is currently owned by the Boise Cascade Corporation. This portion of the river is within the Grande Ronde inventoried roadless area. It has been described by the National Heritage Conservation and Recreation Service as a "long, high-volume river flowing through steep canyons of volcanic rocks. Excellent examples of gooseneck meanders. Supports high quality recreational kayaking and rafting during spring runoff. Still accessible to anadromous fish - potential steelhead and salmon resource."

Through the cooperative efforts of State and Federal Agencies, the private sector and Indian tribes, restoration of anadromous fish runs are becoming a reality. These efforts include upstream salmon hatcheries, spawning habitat improvements and measures to resolve smolt escapement problems at downstream dams on the Snake River.

Having an average flow of 2,200 cubic feet per second, and suitable dam sites, the stream has hydroelectric potential.

The river currently provides over 7,000 recreation visitor days (RVD's) use per year, with over 5,000 RVD's of this use being by boaters (rafts, driftboats, kayaks, canoes).

The stream corridor is nonmineralized. It is sparsely timbered with ponderosa pine and Douglas-fir. The standing volume is estimated to be 8 MMBF. Under the present management plan the timber is not considered suitable for management.

This portion of the river and corridor remains undeveloped and primitive. It is eligible for wild, scenic or recreational status.

In 1984 the Oregon Transportation Commission considered adding the Grande Ronde to the State Scenic Waterways System. The portion under consideration was the 42 miles from the mouth of the Wallowa River to the Washington State line, including the 18 miles on two National Forests. They concluded that the Grande Ronde should not be given scenic status. In 1985 a bill to grant State scenic waterways status died in the Oregon Legislature. In each case vigorous opposition apparently influenced the discussions. There was fear that restrictions would curtail private rights, restrict timber harvest and cause economic hardships. Primary concerns were with the area north of the National Forest which is largely in private ownership.

Natural Landmarks

Under authority of the Historic Sites Act of 1935, the Secretary of Interior has established a National Registry of Natural Landmarks to encourage the preservation of areas that illustrate the ecological and geological character of the United States, to enhance the educational and scientific value of those areas, to strengthen cultural appreciation of natural history, and to foster a wider interest and concern in the conservation of the Nation's natural heritage.

On the Wallowa-Whitman National Forest, the Hells Canyon-Seven Devils geomorphic province and the Wallowa Mountains have been identified as potential National Natural Landmarks due to their geological features.

Each area will remain in potential status until it is further studied by the U. S. Department of Interior, National Park Service to determine if either area should be designated. Since most of both areas are currently designated as wilderness, they are not high on the Park Service list of priorities for study.

Research Natural Areas

In an effort to preserve important or unique ecosystems, habitats and organisms, a Nationwide system of Research Natural Areas (RNA's) has been and continues to be developed. RNA's are tracts of land where natural processes are allowed to dominate and where natural features are preserved for research and education.

The objectives of establishing RNA's are critical to understanding their importance in Forest planning. As stated by the Federal Committee on Research Natural Areas (1968) they are: (1) preservation of examples of all significant natural ecosystems for comparison with those influenced by man; (2) provision of educational and research areas for ecological and environmental studies; and (3) preservation of gene pools for threatened and endangered plants and animals.

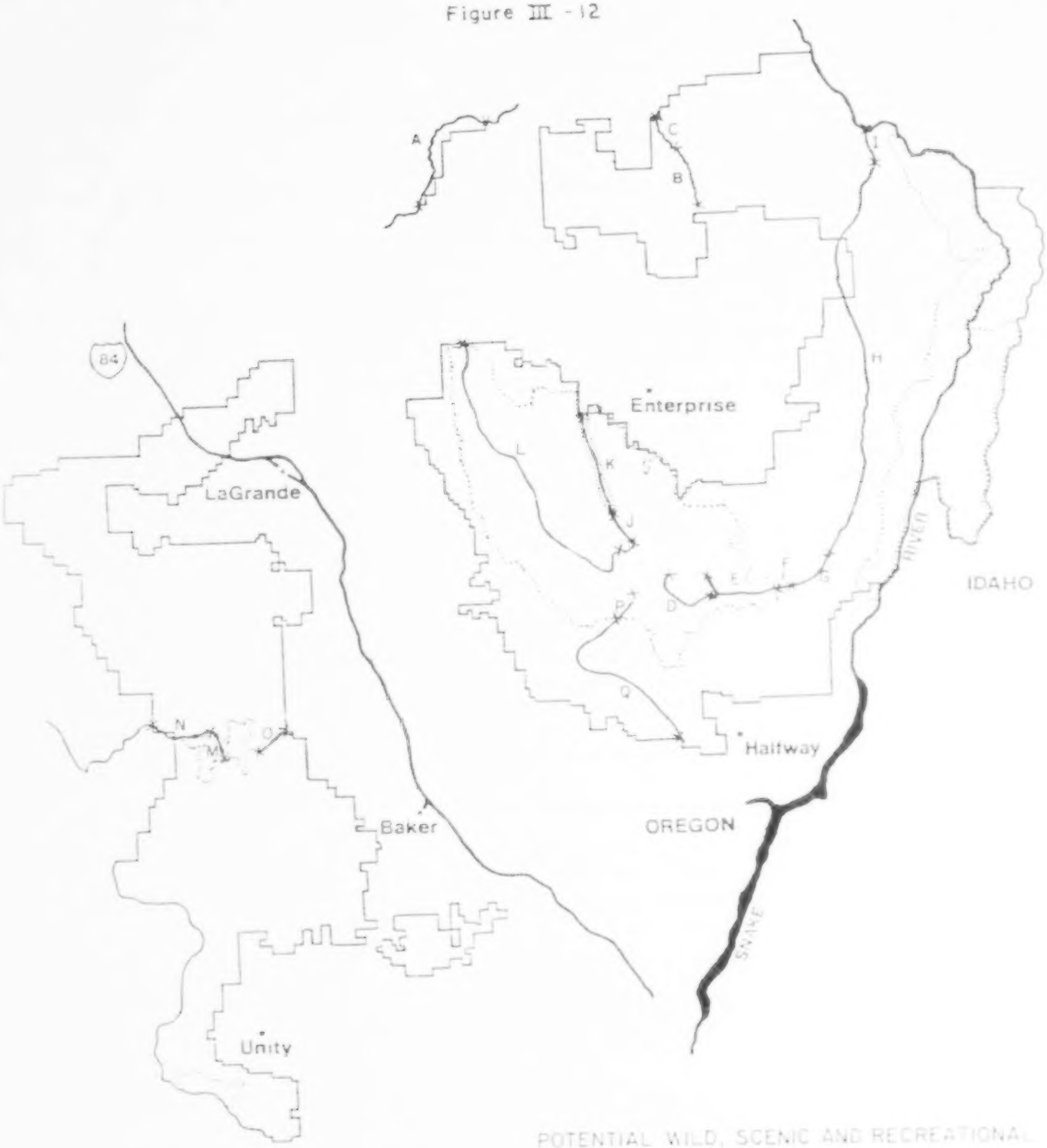
The Indian Creek Research Natural Area is the only RNA currently established on the Forest. Thirteen potential areas, representing some 30 ecologic cells not found in currently established natural areas, have been identified and suggested for inclusion by the research community. Which areas will be recommended for inclusion will be decided through this analysis. (For a discussion of potential research natural areas, see Appendix H.)

Roadless Areas

The Oregon Wilderness Act of 1984 (P.L. 98-328) decreed that lands which were reviewed in the second Roadless Area Review and Evaluation (RARE II) need not be considered for wilderness in the initial Forest Land and Resource Management Plan, but that wilderness options are to be reviewed when the plans are revised. This current (initial) plan is to be reviewed at least every 15 years. For the purposes of wilderness, this DEIS considers only the Dunns Bluff roadless area for addition to wilderness since it was identified after Congressional deliberations on the Oregon Wilderness Bill had taken place. However, all remaining roadless areas are discussed and information on their resources, suitability for roadless recreation, and potential for future consideration as wildernes is provided. (See Appendix C and Chapter IV for detailed information on roadless areas.)

There are now 36 roadless areas on the Forest. Some that lie along the perimeter of the Eagle Cap Wilderness are very small, having had major portions added to the Wilderness by the Oregon Wilderness Bill. The largest remaining areas are the Twin Mountain, which includes most of the Elkhorn Mountain Range west of Baker, and the Lords Flat-Somers Point area near the geographic center of the Hells Canyon National Recreation Area.

Figure III -12


A
C
B
I
84
Enterprise
H
LaGrande
L
K
J
J
E
F
G
D
P
RIVER
IDAHO
Q
N
O
M
Halfway
Baker
OREGON
SNAKE
Unity

POTENTIAL WILD, SCENIC AND RECREATIONAL RIVERS

LEGEND

River segment A - Q (see table III-11 for segment descriptions)

Wilderness boundary

6/85

Table III-11
POTENTIAL WILD, SCENIC, AND RECREATIONAL RIVERS

River	Segment	Description	Miles	Eligibility 1/
Rivers on National Park Service Inventory				
Grande Ronde River	A	Within National Forest boundary from Rondowa to 1/2 mile below Grossman Creek	18	W,S,R
Joseph Creek	B	Crow Creek Bridge to Joseph Creek Ranch	6	R
Joseph Creek	C	Joseph Creek Ranch to Forest Boundary	11	W,S,R
S. Fork Imnaha 2/	D	All	9	W
Imnaha 2/	E	Within wilderness	5	W
Imnaha 2/	F	Wilderness boundary to Indian Crossing	1	W,S,R
Imnaha 2/	G	Indian Crossing to Ollokot Campground	10	R
Imnaha 2/	H	Ollokot Campground to Cow Creek	48	R
Imnaha 2/	I	Cow Creek to Mouth	4	W,S,R
Lostine 2/	J	Within wilderness	4	W
Lostine	K	Wilderness boundary to Forest boundary	15	R
Minam 2/	L	Within wilderness	23	W
N. Fork John Day 2/	M	Within wilderness	3	R
N. Fork John Day	N	Nonwilderness portion	7	R
Other Rivers Determined to Be Eligible				
N. Powder	O	Origin to Forest boundary	6	W,S,R
Eagle Creek 2/	P	Within wilderness	4	W
Eagle Creek	Q	Wilderness boundary to Forest boundary	18	R

1/ W = Wild S = Scenic R = Recreational
2/ Not analyzed for classification in this DEIS (see discussion).

Of the remaining roadless areas, 13 are all or partially within the Hells Canyon National Recreation Area. Homestead, which also lies on land administered by the USDI, Bureau of Land Management, is being studied for wilderness. The Bureau of Land Management is the lead agency. The allocation of the others, with the exception of Lake Fork which lies largely outside the NRA, was determined through the recently completed Hells Canyon National Recreation Area planning process. These decisions will be adopted by the Forest Land Resource Management Plan. This leaves 25 areas (including Lake Fork) to be dealt with in the current planning effort. Figure III-13 and Table III-12 show the locations and sizes of the areas. For detailed roadless area information, see Appendix C.

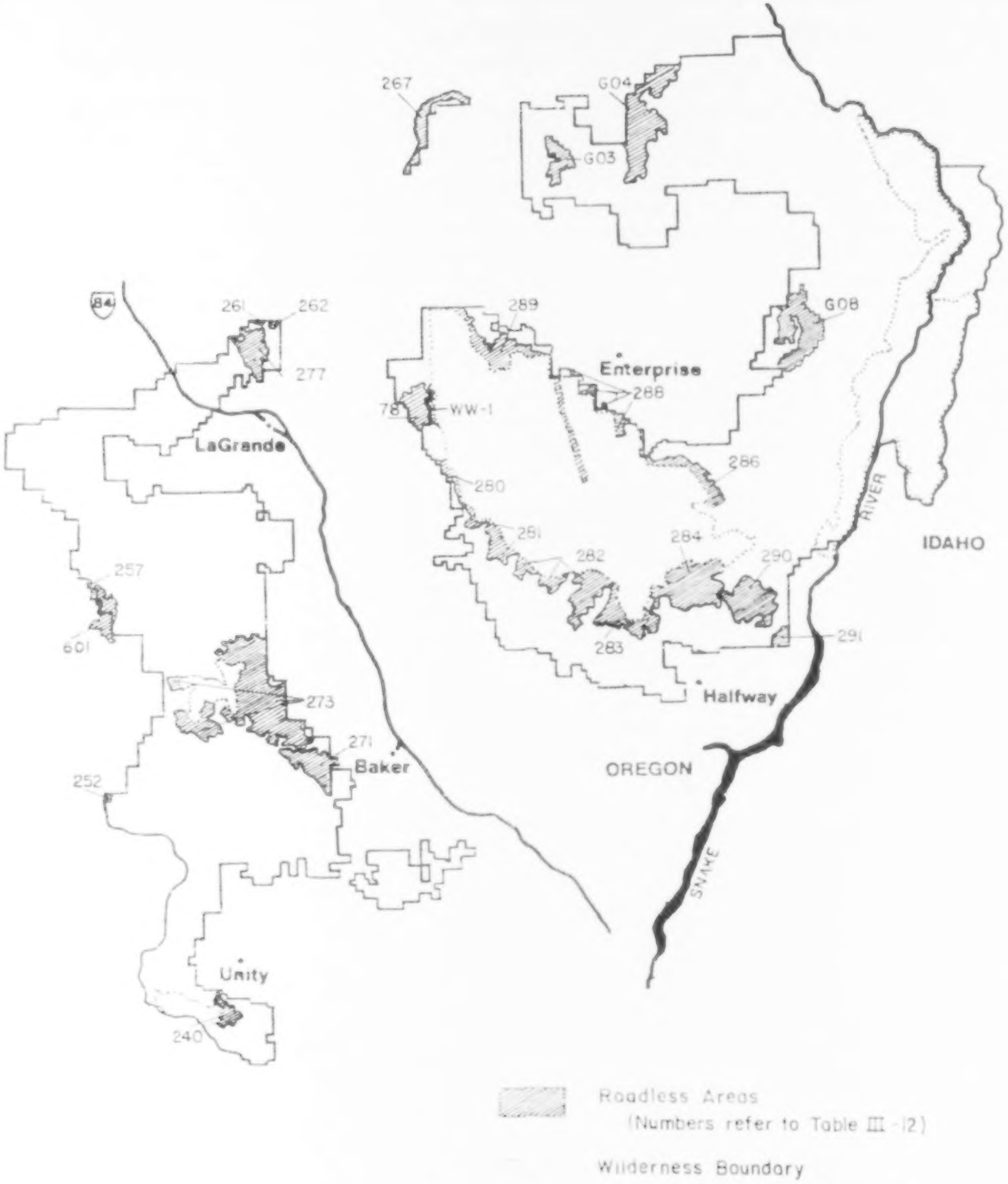
RESOURCE SUPPLY AND DEMAND PROJECTIONS

This section summarizes anticipated supply and demand conditions for Forest goods and services for the RPA time period. The great bulk of the Forest outputs and activities identified in the RPA Program are intermediate in nature--they do not represent final outputs. To speak of supply-demand relationships for precommercial thinning or miles of road constructed, for instance, would be inappropriate. The appropriate consideration in the former case is sawtimber production, in the latter instant, road versus nonroaded recreation. Precommercial thinning, road construction, local area impacts, and so on are effects and are, therefore, not discussed here.

As used in this section of the document, "demand" is used to identify a particular point or instant on a demand schedule. As such, it reflects an intersection at a particular point in time between a demand schedule (a list of willingness-to-pay values for various levels of offerings) and a supply schedule (a list of volumes the seller is willing-to-offer at various prices).

Table III-13 depicts those intersection points over time for those Forest outputs for which such a display is meaningful. As such, they assume a continuation into the future of those factors which would provide viability for the respective enterprises. In the case of livestock grazing, for instance, the figures assume continued population growth in the United States, a certain level of red meat consumption per capita, certain levels of imports and exports, certain cost levels for the goods and services used in the production of red meat, and so on. The projections, like any projections, are therefore expected to be less accurate in the distant future than in the near future.

Figure III - 13
ROADLESS AREAS


267
G04
G03
84
261
262
277
289
Enterprise
288
G08
78
WW-1
LaGrande
286
280
281
282
284
290
RIVER
IDAHO
257
601
283
291
Halfway
273
271
Baker
OREGON
252
SNAKE
Unity
240
Roadless Areas
(Numbers refer to Table III-12)
Wilderness Boundary

8/85 LDH

Table III-12
ROADLESS AREAS

See Appendix C for description of each roadless area listed below

Name	Roadless Number	Area Net Acres	Ranger District
Boulder Park	282	12,311	La Grande, Pine
Castle Ridge	278	12,001	La Grande
Deadhorse	G08	10,451	Wallowa Valley
Dunns Bluff	WW1	1,013	La Grande
Grande Ronde 1/	267	4,890	Wallowa Valley
Greenhorn 2/	252	161	Unity
Homestead 4/	291	5,733	HCNRA, Pine
Hellhole 1/	261	513	La Grande
Huckleberry	289	10,707	Eagle Cap
Hurricane Creek	288	1,623	Eagle Cap
Joseph Canyon	G04	23,602	Wallowa Valley
Lake Fork	290	17,663	HCNRA, Pine
Little Creek	280	2,907	La Grande
Little Eagle Meadows	283	7,140	Pine
Little Sheep	286	5,278	Eagle Cap, Wallowa Valley
Marble Point	271	7,135	Baker
Monument Rock 3/	240	5,958	Unity
Mount Emily	277	12,022	La Grande
North Mount Emily 1/	262	772	La Grande
Reservoir	284	13,595	Pine
Squaw 1/	601	3,220	La Grande
Tope Creek	G03	8,674	Wallowa Valley
Tower 1/	257	85	La Grande
Twin Mountain	273	60,903	Baker
Upper Catherine Creek	281	6,844	La Grande
Totals	25	235,201	

See Hells Canyon FEIS Appendix D for description of each roadless area listed below.

Buckhorn	297	15,466	HCNRA
Cook Ridge	299	16,149	HCNRA
Imnaha Face	294	25,812	HCNRA,
Lick Creek	285	218	HCNRA, Pine

1/ Portions also lie within Umatilla National Forest.

2/ Portions also lie within Malheur and Umatilla National Forests.

3/ Portions also lie within Malheur National Forest.

4/ Portions also lie within lands administered by USDI Bureau of Land Management.

Table III-12 (continued)
ROADLESS AREAS

See Hells Canyon FEIS Appendix D for a description of each Roadless area listed below

Name	Roadless Number	Area Net Acres	Ranger District
Lord Flat Somers Point	295	63,912	HCNRA
Mountain Sheep	298	16,777	HCNRA
Sheep Divide	G02	16,178	HCNRA, Wallowa Valley
Snake River	296	29,933	HCNRA
Wildhorse	300	14,602	HCNRA
Big Canyon (Idaho)	853	14,236	HCNRA
Corral Creek (Idaho)	854	19,180	HCNRA
Totals	11	232,463	

Table III-13
SUMMARY OF PROJECTED SUPPLY AND ANTICIPATED DEMAND

	1986 - 1990	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030
Recreation					
Developed Recreation					
Including Visitor Information Service (MRVD's)					
Projected Supply					
Current Direction	587	595	603	610	618
Maximum Developed Recreation 1/	661	661	661	661	661
Forest Plan	661	661	661	661	661
Anticipated Demand 2/	399	464	523	572	635
Dispersed Recreation Including Wildlife and Fish Use (MRVD's)					
Projected Supply					
Current Direction	7,104	7,417	7,658	7,658	7,658
Maximum Dispersed Recreation 3/	7,149	7,533	7,810	7,810	7,810
Forest Plan	7,034	7,222	7,342	7,342	7,342
Anticipated Demand 2/	1,337	1,472	1,698	1,898	2,033
Projected Supply of Roaded Recreation 4/					
Current Direction	5,904	6,388	6,748	6,748	6,748
Maximum Roaded Recreation 3/	5,904	6,567	6,996	6,996	6,996
Forest Plan	5,831	6,199	6,444	6,444	6,444
Anticipated Demand 2/	742	811	1,002	1,165	1,261
Projected Supply of Nonroaded Recreation 4/					
Current Direction	1,200	1,029	910	910	910
Maximum Nonroaded Recreation 5/	1,227	1,112	1,035	1,035	1,035
Forest Plan	1,203	1,023	898	898	898
Anticipated Demand 2/	595	661	696	733	772
Timber					
Sawtimber (MMBF)					
Projected Supply					
Current Direction	139	142	151	133	139
Maximum Timber Benchmark	193	192	189	189	185
Forest Plan	143	137	156	140	137
Anticipated Demand 6/	250	250	250	250	250
Roundwood (MMCF)					
Projected Supply					
Current Direction	7.8	6.5	5.2	5.2	5.2
Maximum Timber Benchmark	10.9	9.1	7.2	7.2	7.2
Forest Plan	7.8	6.5	5.2	5.2	5.2
Anticipated Demand 7/	12	12	12	12	12
Livestock Grazing (MAUM's)					
Projected Supply					
Current Direction	186	186	186	186	186
Maximum Livestock Benchmark	227	227	227	227	227
Forest Plan	207	207	207	207	207
Anticipated Demand	227	227	227	227	227

1/ All alternatives except A, which is a budget-constrained alternative.

2/ Based on recent historical experience, OBERS population projections for the State of Oregon, and Forest recreational opportunities.

3/ Alternative B.

4/ Inclusive of WFUD's and recreational experience occurring in wilderness.

5/ Alternative E.

6/ Based on mill capacity depicted on pp. 25 and 53 of James O. Howard's Oregon's Forest Products Industry: 1982, Resource Bulletin PNW-118, October 1984; USDA Forest Service. Projections of demand entail projections of a myriad of interconnected factors--some of which can reasonably be estimated (population, for instance) and some of which cannot (technological breakthrough, shifts in appraisal methods, etc.). It is reasonable to assume that installed mill capacity could be maintained for 2 decades, and that mill capacity beyond that time would be sufficient to process Forest offerings.

7/ Anticipated demand levels are basically an expression of mill capacity continued into the future. Arguments might be made that population pressures would tend to increase overall National demand, assuming a relatively stable price structures. No increase was shown however because of the opportunities available to substitute other products for wood and because, as an expression of local demand, expanded mill capacity would be contrary logic when raw material supply levels are not expected to increase.

Chapter IV

ENVIRONMENTAL CONSEQUENCES

OVERVIEW

This chapter provides the scientific and analytic basis for the comparison of alternatives presented in Chapter II. Chapter IV will provide written discussion of the reasons and causes of the environmental effects of the alternatives, and present the important interrelationships among resources, land uses, and environmental conditions. Because of the extensive information about effects available in the tables in Chapter II (particularly in Tables II-3a and II-3b), the outputs and environmental effects will not be recorded in as much detail in this chapter. In many cases, greater detail on outputs and environmental consequences is available in Chapter II. In this chapter the attempt has been made to discuss those effects which are directly related to the major issues identified in Chapter I or are of specific public or management concern.

The net public benefits from the Wallowa-Whitman National Forest are derived from resources with market and assigned prices as well as resources and conditions for which prices cannot reasonably be assigned. Nonpriced benefits include quantifiable and qualitative outputs and effects. Quantified and qualitative outputs and effects are both crucial to understanding the whole picture of environmental consequences and the net benefits to the public. Both are discussed here and in comparing alternatives in Chapter II. Material in this chapter will explain the relationships between resource outputs and environmental qualities, consequences, and include, where relevant, the ties between quantitative and qualitative aspects.

Alternatives are primarily different combinations of land management areas. Thus, the effects of an alternative are largely determined by the effects of management area direction (management strategies) and the number of acres allocated to each management area. However, the rate of implementation is also important. For example, the effects on soil and water within a drainage basin will be different if the merchantable timber is removed over a 10-year period than if the same timber is removed over a 30-year period.

Effects can be beneficial or adverse, direct or indirect, cumulative or noncumulative. Although direct and indirect effects are discussed they are not, in general, discussed separately in this section. Effects vary in importance from negligible to significant and may be short-term (10 years or less) or long-term (over 10 years). The analysis identifies the significant adverse effects which cannot be avoided and those effects which represent irreversible and irretrievable commitments of resources should the proposed action be implemented.

This environmental impact statement deals with numerous activities and programs affecting the variety of environmental conditions over the entire Forest. Therefore, many of the effects are described in a general sense. Most site-specific consequences will be addressed in subsequent project analyses, e.g., timber sale proposals or recreation developments, in which the particular physical setting is known.

Cumulative consequences include the accumulation of impacts on the environment which result from the impact of an action when added to other past, present and reasonably foreseeable future actions. These relationships are discussed in this document to the degree they can be, given their complexity and unpredictability. Often it is difficult to predict with any reasonable degree of accuracy instances in which problems with cumulative effects will arise. An example of this is mining activity, which may flourish or nearly cease with changes in the economy. The intent in this environmental statement is to focus analysis and decisions at a programmatic level, and deal with site-specific accumulated effects at the project level. For example, when timber sales are being considered, the cumulative effects of potential activities in the watershed, perhaps on adjacent private land, will be analyzed. This project level analysis will determine whether the resource management objectives (Forest Plan, Chapter 4) can be met, considering specific cumulative effects. If resource objectives cannot be met, then the project cannot be implemented in its proposed form.

The role of standards and guidelines is very important in considering the environmental consequences since the standards and guidelines serve as the primary mitigation measures for any actions on the Forest (Forest Plan, Chapter 4). They give direction for program and project implementation. They too will vary somewhat in effectiveness, depending on site-specific conditions, and will also be addressed in subsequent analyses, tiered to this EIS.

Much of this analysis is based on modeling which is made difficult by the complex interrelationships of economic, physical, and biological conditions, management prescriptions, changing technology, and the necessity of using average values. Therefore, many predictions are at best rough estimates. An important part of implementation will be to monitor the accuracy of predictions in order that more information is available for future planning efforts. It will be more than three decades before the Forest is brought into a regulated condition where each acre is being managed by the strategies proposed. During that period, the Forest will have been reanalyzed and new Forest Plans prepared at least twice. For additional discussion, see Uncertainty of Analysis, Appendix B.

CONSEQUENCES

Threatened and Endangered Species

Effects of Alternatives on Endangered and Threatened Species

Regardless of the alternative, protection of listed species will take precedence over other land management direction. Informal consultation with the U. S. Fish and Wildlife Service determined no effect on threatened or endangered species arising from the decisions addressed within this DEIS and proposed Land and Resource Management Plan. Provision is made in the plan to pursue informal or formal consultation as necessary during project design and analysis.

At present there is one threatened animal species, the northern bald eagle (Haliaeetos leucocephalus) and one endangered animal species, the Peregrine falcon (Falco perigrinus) on the Wallowa-Whitman. There are no known threatened plants and one endangered plant species. This is the MacFarlane's Four-o'clock (Mirabilis macfarlanei). See Forest Service Manual 2670 (Wallowa-Whitman Supplement) for additional information on these species as well as a list of species considered sensitive, i.e., species which are not threatened or endangered but for which population viability is a concern.

Effects of Protecting Endangered and Threatened Species on Other Resources

The area of existing and potential habitat for threatened or endangered species on the Wallowa-Whitman National Forest is so limited that no measurable effect on other resources can be projected as a result of fully protecting these species habitats. Much of the existing and potential habitat is within classified wilderness or wild or scenic rivers.

Cultural Resources

Effects of Alternatives on Cultural Resources

Historical and archaeological sites will be inventoried and evaluated to assure compliance with the National Historic Preservation Act of 1966 and Executive Order 11593 of 1971, Protection and Enhancement of the Cultural Environment. Important cultural sites will be protected in all alternatives. However, since the amount of ground disturbance varies with alternative, the potential for disturbing unknown sites will vary. Assuming a direct relationship between ground disturbance and the possibility of cultural site disturbance, the potential for site disturbance will vary with alternatives accordingly as follows in comparison with Alternative A: Alternative B and B-departure would have a 9 percent greater chance of disturbance; Alternative G, an 8 percent greater chance; Alternative E, 6 percent less chance; Alternative F, 24 percent less chance; and with Alternative C, C-departure and H there would be no difference.

Management activities which disturb ground and lead to risk of damage to archaeological sites also may lead to discovery of sites. This could be considered a beneficial effect of the ground disturbing activities, and would also vary with alternatives according to the amount of site disturbance.

The Oregon Wilderness Act of 1984 (P. L. 98-328) provides that the Forest Service shall inventory all archaeological and historic sites within the Joseph Creek drainage and determine their eligibility for the National Register of Historic Places. Prior to activities that may affect such prehistoric, historic, or cultural sites, the Forest Service shall follow the procedures in 36 CFR 800 which implement the National Historic Preservation Act, as amended, in order to fully consider and protect the important values of such sites. This will be true regardless of alternative.

In compliance with Section II of Executive Order 11593, an action cannot result in the sale, transfer, demolition, or substantial alteration of lands seemingly with characteristics for future nominations to the National Register of Historic Places.

P. L. 95-341, the American Indian Religious Freedom Act provides that the United States protect the rights of Native Americans to express their traditional religious practices. Although no specific sites have been identified to date, it is possible that ceremonial sites or sacred objects lie on the National Forest. Indian religious leaders have been, and will continue to be, consulted to ensure that these privileges are considered in resource management decisions.

The Effects of Cultural Resources on Other Resources

The protection of cultural sites may result in restriction or elimination of other resource activities. Because of the small areas involved, it is not anticipated that the effects will be significant, regardless of management plan alternative. Aspects of individual projects, such as road or trail locations, will occasionally be affected.

Urban Environments

Effects of Alternatives on Urban Environments

Lying in rural northeast Oregon and western Idaho, more than 100 miles from the nearest urban area, implementing any of the alternatives will have no direct effects on urban environments. That the Forest is there for urban dwellers' enjoyment may be considered an indirect effect. Management of the Forest contributes forest products to the National economy. These are used by urban dwellers.

Wetlands and Floodplains

Effects of Alternatives on Wetlands and Floodplains

Executive Orders 11990 and 11988 require protection of wetlands and floodplains, respectively. In general, each Federal agency is to minimize loss or destruction of wetlands and to preserve natural and beneficial values served by floodplains. The potential for damage to wetlands and floodplains may be from fire, timber harvest, grazing or mining. Because of the legal provisions, and the relatively small area involved (less than 3 percent of the Forest), the differences among alternatives are not measurable. The effects on specific wetlands and floodplains will be evaluated during the analysis of individual implementation projects. (See Standards and Guidelines for Riparian Ecosystems, Forest Plan, Chapter 4).

Effects of Wetlands and Floodplains on Other Resources

Protection of wetlands and floodplains can result in slight reductions in timber or forage yields. In most instances protection of the area is best for all resources (except perhaps for mineral extraction) in the long run. Cost of timber harvest may be higher in some instances due to the need for specialized logging equipment or requirements for harvesting during periods when snow protects the ground from disturbance. The differences among alternatives would be slight due to the small land area involved and mitigation measures.

Prime Farmlands, Forest Lands and Range Lands

Effects of Alternatives on Prime Farmlands, Forest Lands, and Range Lands

All alternatives are in keeping with the intent of Secretary of Agriculture Memorandum 1827 for prime rangeland, farmland and forest land. Regardless of alternative, Forest Service lands will be managed with a sensitivity to the effects which their management will have on adjacent private and public lands.

Herbicides

Effects of Alternatives on the Use of Herbicides

Herbicides will be used in all alternatives for uses such as controlling unwanted roadside vegetation along State highways; for control of noxious range weeds or forbs; for spot control of grasses and sedges in tree plantations; and for occasional use in controlling ninebark shrubs. The amount of use is unestimated but will be higher in those alternatives which produce higher timber output levels than in lower timber-production alternatives.

Use in all alternatives will be low in comparison to western Oregon Forests where herbicides are often used to control a variety of vegetation that competes with trees.

Effects of Herbicides on Resources

The various herbicides used on the Wallowa-Whitman and their effects are described in the Regional Environmental Impact Statement on methods of managing competing vegetation (USDA Forest Service, 1981, as supplemented).

Wilderness Establishment

Effects of Alternatives on Wilderness Establishment

All or portions of four wildernesses lie within the Forest. These areas will remain in wilderness in all alternatives. Due to the recent adjustment (1984) of the wilderness boundaries by Congress, and the lack of significant apparent interest in reducing the size of the wildernesses, the Forest Service is not recommending any deletions during this planning period. Alternatives E and F show a slight expansion of the Eagle Cap Wilderness with the addition of the 1,013-acre Dunns Bluff Roadless Area. See Appendix C for a description and evaluation of this area.

Effects of Wilderness Establishment on Other Resources

Only the Dunns Bluff roadless area is eligible for wilderness consideration in this planning effort (see Chapter III, Roadless Areas). It is proposed for wilderness in Alternatives E and F. If the area were designated wilderness it would prevent recreational visitors from driving vehicles into the area for camping convenience as is now common. It would curtail wood cutting for commercial or home use. It is unlikely that livestock grazing would be affected. The standing timber volume of 5 MMBF would not be available for harvest and utilization which would affect the annual timber harvest for the Forest by approximately .07 MMBF if compared with Alternatives B or G. In comparison with other alternatives there is no loss of timber production since the area is currently designated or proposed for allocation to Management Strategy 6, which permits timber harvest only when necessary to salvage timber from catastrophic occurrence. Placing the Dunns Bluff area in wilderness would maintain the area in a condition only subject to forces of nature. The wilderness values of the area would be retained.

Utility and Transportation Corridors

Effects of Alternatives on Utility and Transportation Corridors

No new full corridors (see Glossary, Corridors) are proposed in any of the alternatives and all alternatives propose to establish one existing utility corridor. This is the corridor northwest of La Grande which includes Interstate Highway 84, a railway, and several underground and aboveground power transmission lines. The corridor is proposed to be approximately one mile wide.

Designating the corridor as an existing utility corridor will serve to facilitate future rights-of-way authorization in what is a major transportation and power transmission route. Assuming 50 to 100 feet for powerline right-of-way width and 200 feet right-of-way width for power transmission lines, there is an additional capacity within the proposed corridor which varies from 1 to 1.8 miles in width. Most of the residual capacity lies south of the interstate highway.

Designation of the I-84 corridor would recognize the situation as it exists. Most tradeoffs of visual and other resources have already occurred as a result of the existing facilities and these tradeoffs are not considered objectionable. By careful planning, the impact of additional facilities within this corridor is likely to be much less than if the facilities were to be located elsewhere on the Forest.

No need for other new power transmission facilities has been expressed, but if new needs do arise, the attempt will be made to use existing corridors.

A consequence of all alternatives will be to make it clear where future transmission facilities will be excluded (to protect wilderness values), where they will be discouraged (to prevent recreational and scenic conflicts) and where they will be encouraged (designated existing corridors). These decisions will be useful to those wishing to use the Forest for power transmission purposes and will protect the public's interest. Each new proposal will be subject to environmental analysis to verify the need for the proposal, review alternatives, and determine site-specific effects and mitigation measures.

Management Area 6 is an avoidance area in each alternative and as it varies, the avoidance area varies. It is unlikely that this will have a significant impact on future power transmission plans regardless of alternative.

The only proposed exclusion areas are wilderness and wild and scenic rivers, where most facilities would not be in conformance with the provisions of the respective laws. Areas recommended for avoidance (Hells Canyon National Recreation Area, Management Area 6, research natural areas, recreation and administrative sites) will vary with each alternative. However, no new facilities are currently proposed to cross such areas in any of the alternatives. Existing facilities would not have to be removed during this planning period unless it becomes convenient to do so. The intent would be to not permit additional facilities in avoidance areas.

The Effects of Utility and Transportation Corridors on Other Resources

Because corridors usually require a cleared strip of land and often the erection of structures, virtually every Forest resource may be affected. The effects include those on landscape appearance, timber production, mineral extraction, wildlife, livestock grazing and recreational uses. Since no new corridors are anticipated within the life of this plan, most of the impacts are from ongoing maintenance. Maintenance may mean control of vegetation, especially trees, through the use of herbicides or mechanical means. Therefore, timber production is often curtailed and wildlife cover foregone. On the positive side, forage for wildlife and livestock is often increased.

Minerals

The Effects of Alternatives on Mineral Production

New mineral entry is prohibited within the four wilderness areas on the Forest, certain recreational and administrative sites, the Hells Canyon NRA, and research natural areas. Nearly all of the research natural areas are proposed for location within wilderness or the Hells Canyon National Recreation Area. Exceptions are Vance Knoll and Government Draw which are believed to be nonmineralized. Therefore, since the National Recreation Area, wilderness, and administrative sites vary little among alternatives, there is little measurable difference among alternatives in the area withdrawn from mineral entry.

Mineral prospecting will be more easily accomplished in alternatives which provide a higher degree of roading. Therefore, Alternatives E and A would be slightly less favorable for mineral exploration than more commodity-oriented alternatives such as Alternatives B, B-departure, or G. There may also be a reluctance by mining firms to invest in areas that are designated to remain roadless because of their speculation that the areas may be designated wilderness at a later date. This perception would also tend to make the more commodity-oriented alternatives more favorable from a minerals standpoint.

Table IV-1 illustrates the relative differences and effects of the various land management alternatives on the minerals resource.

Table IV-1
ACRES OF MINERAL POTENTIAL BY ALTERNATIVE

Alternative	A		B, B-dep & G		C, C-dep, D & H		E		F		All
Category*	Open	Restricted	Open	Restricted	Open	Restricted	Open	Restricted	Open	Restricted	Closed
I	900	4,200	2,100	3,000	1,100	4,000	1,000	4,100	1,100	4,000	2,200
II	13,300	6,700	14,700	5,300	13,200	6,800	12,300	7,700	13,200	6,800	1,900
III	37,200	5,700	36,900	6,000	34,600	8,300	33,100	9,800	36,700	6,200	5,500
IV	138,000	23,400	151,700	9,700	146,100	15,300	136,800	24,600	139,200	22,200	184,000
Totals	189,400	40,000	205,400	24,000	195,000	34,400	217,600	46,200	190,000	186,700	193,600

* Refers to mineralized areas considered to be of highest mineral potential/likelihood of near-term development (I), to lowest mineral potential with likelihood of near-term mineral development (IV). Nonmineralized and unknown areas are a separate, unmeasured category. "Open" includes small area of moderate restriction such as stream sides or sensitive landscapes. "Restricted" refers to extensive areas where roadless recreation is emphasized.

Effects of Mineral Activities on Other Resources

In the past, mining-related activities have resulted in undesirable environmental effects which are still plainly visible. These effects include stream siltation, topsoil removal, aquifer disruption, and scars on the landscape. Paradoxically, the remains of old mines and mineral processing plants are often points of recreational and historical interest on the Wallowa-Whitman as well as on other National Forests.

Modern-day prospecting and mineral operations are more sophisticated and do not result in the same degree of environmental degradation that has cast mining in an unfavorable light to many people. State laws have also been enacted which, for example, regulate the amount of suspended or dissolved material that may be introduced to a stream from a mining operation. On the National Forest, plans of operation are required which control significant impact on surface resources from development of mineral deposits and provide for rehabilitation of disturbed sites after operations are completed. Regardless, mineral activities result in environmental impacts which, though usually mitigated, are still noticeable for many years. Like any industrial operation, smoke, dust and noise are created. Placer operations, even with reasonable care taken, are likely to increase sediment in streams. Any mine will have some effect on aesthetics. These effects will be the same for any given mining operation regardless of the land management alternative selected.

As with the utilization of other commodity resources, mineral extraction furnishes materials needed by society and provides jobs and income. It also provides a significant amount of recreation activity for amateur geologists and miners.

Human Resource Programs

Effects of Alternatives on Human Resource Programs

The human resource programs for the Wallowa-Whitman are apt to fluctuate with the political/economic climate of the Nation. They are unrelated to Forest Plan management alternatives and are not apt to vary by alternative.

Whereas the Forest has had a relatively high enrollment in special programs in past years, it has been declining (a high of 156 enrollee positions in 1978 to 36 in 1984). The Regional Guide assigns only four enrollee years per year to the Wallowa-Whitman through year 2030. This indicates a relatively low emphasis, regardless of management alternative.

Effects of Human Resource Programs on Resources

Human resource programs, all providing work and training, also benefit various Forest resources through such activities as campground construction, trail maintenance, slash disposal, and clerical work.

Developed Recreation

Effects of Alternatives on Developed Recreation

At present the capacity of developed recreation sites (583,000 RVD's) exceeds the developed recreation use (366,700 RVD's) the Forest experiences during the normal recreation season. Only on weekends are the more popular sites filled. A study of population projections and other factors which influence developed recreation use indicates this surplus of capacity will continue for many years. The RPA-developed recreation goal for the Forest for the period 1986-1990 is 407,000 recreation visitor days increasing to 430,000 by the year 2030. While present use levels are less than the RPA target it is likely that the levels for the five-decade period through 2030 will exceed RPA goals as well as existing capacity. Therefore, there are plans to construct new facilities in the Hells Canyon National Recreation Area where additional facilities were authorized by Congress in order to develop the recreation potential of the river corridor.

There will be slight differences in experiences associated with those sites that are within timber management areas. For example, sites that currently lie within unroaded areas (of which there are few) will provide the user a different experience than when the area is surrounded by land that has recently had the timber harvested. However, all major sites, such as those at Anthony Lakes, Phillips Lake, or Mt. Howard, lie within land management allocations with special provisions for protecting the recreation setting, regardless of alternative.

Table IV-2 summarizes and compares RPA targets, projected use and capacity for developed recreation. Alternative A would involve an investment of $87,000 per year, most of which would be used for reconstruction of existing sites. It is projected that shortly after 2010, we would reach 90 percent of capacity. All other alternatives would involve an investment of $39,000 per year, mostly for reconstruction, plus $477,000 per year from 1986 through 1995 for the Hells Canyon National Recreation Area, primarily for construction. This would result in a major increase in capacity, as authorized by Congress in the HCNRA Act.

Table IV-2
PROJECTED DEVELOPED RECREATION CAPACITY AND USE
(Thousands of Recreation Visitor Days Per Year)

Year		Recent Levels	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
Capacity	Alternative A	583	587	595	603	610	618
	all other Alts.	583	661	661	661	661	661
Projected Recreation Use All Alternatives		367	399	464	523	572	635
RPA Target			407	410	410	410	430

Effects of Developed Recreation on Other Resources

Developed recreational activities take place at improved sites such as campgrounds, swimming and boating areas and winter sports sites. These uses have impacts on the specific land areas such as soil compaction, wildlife, incidental damage to vegetation and normal wear and tear on facilities. These impacts can be mitigated, as necessary, through management and maintenance programs.

The effect on other resource uses is not great due primarily to the relatively small land area involved - approximately 3,900 acres or .2 percent of the Forest area. The timber on the developed sites is normally not available for regulated timber harvest. The sites are normally withdrawn from mineral, gas or oil exploration and development activities. In the event of proven important mineral occurrence, revocation of the withdrawal would be considered. The apparent mineral potential of currently developed recreation sites is negligible.

Dispersed Recreation

Effects of Alternatives on Dispersed Recreation

Dispersed recreation currently totals approximately 1,144,300 recreation visitor days (RVD's) for the Forest. This is expected to increase to some 1,315,000 during the first decade of the plan and to 2,020,000 by 2030. The amount of total use would be unlikely to vary significantly among alternatives. External factors such as the general economic climate and distance from population centers have greater influence than do changes in the character of the Forest that will result from the range of alternatives. Total dispersed recreation capacity will continue to far exceed use for many decades, regardless of the Forest Plan alternative selected.

Considering that there are approximately 1.08 jobs created for each 1000 RVD's, the impact on the local economy is significant.* It is estimated that 1,235 local jobs result from the dispersed recreation the Forest provides.

Although total use is relatively insensitive to changes in management, kinds of dispersed opportunities that are available will vary between alternatives. This is reflected in changes in the recreation opportunity spectrum (ROS) classes. The changes are somewhat limited due to the fact that most of the nonwilderness areas of the Forest are already roaded. The changes in recreation opportunity spectrum class acreage in Table IV-3 are primarily due to varying degrees of road construction in the remaining undeveloped nonwilderness areas.

Roaded-modified acreage and capacity increase substantially in all alternatives, with the largest increases occurring in alternatives B and B-departure. In Alternatives C, C-departure, D, F and H, smaller increases are projected because of the greater acreages of land retained in an undeveloped condition.

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* Wallowa-Whitman IMPLAN Computer Runs. Includes Direct, Indirect and Induced jobs.

Due to roading of currently unroaded areas, semiprimitive motorized acreage and capacity will decrease in all alternatives, with the decrease varying from 31 percent to 51 percent. This includes roading of unroaded areas as well as roading of areas that are not part of the roadless area inventory. In all alternatives except Alternative E, projected use will reach capacity by the year 2000. Especially in alternatives B, B-departure and G, there will be a shortage of off-road four-wheel drive and motorcycle opportunities in a semiprimitive setting. It is expected that this demand will be met by providing such opportunities in a roaded-natural/modified setting, although the recreation experience will be substantially different.

Semiprimitive nonmotorized acreage and capacity decrease in all alternatives, with the decrease varying from 19 percent to 53 percent. Projected use is still less than capacity in the year 2025 in Alternatives E and F. In Alternative A projected use reaches capacity at about the year 2020. In Alternatives C, C-departure, D and H projected use reaches capacity by about the year 2010. In Alternatives B, B-departure and G, projected use reaches capacity by about the year 2000. It is expected that the excess demand will be met through increased use of semiprimitive and primitive environments in wilderness. In Alternatives B, B-departure, and G, this results in all semiprimitive and primitive classes, both inside and outside wilderness, reaching capacity by the year 2025.

Wilderness ROS classes do not change over time, except for minor changes in Alternatives E and F. Wilderness will be managed to preserve its primitive character. However, as road access to wilderness boundaries becomes more convenient, this will become more difficult. Also, as use nears capacity, special measures such as permit systems are likely to become necessary.

Because the recreation opportunity spectrum classes are broad, there are significant differences within classes. Examples are with Alternatives C and D which show the same amount of semiprimitive motorized area. Yet, Alternative C includes more Management Area 3 than does Alternative D. In some Forest users' eyes Management Area 3 would provide a significantly different recreation experience than would Management Area 1 which is more dominant in Alternative D. Table IV-3a illustrates the number of recreation visitor days that are estimated to be available, by ROS class, at year 2025, by alternative.

Of the three National Recreation Trails on the Forest, the Snake River and Nee-Me-Poo Trails lie within the Hells Canyon National Recreation Area and will be unaffected by this planning effort. The character of these two trails, and views therefrom, will not be altered by Forest management activities. Neither will the Elkhorn Crest Trail be altered but since Alternatives B and B-departure provide for timber harvest in the upper reaches of the North Powder River, and several other areas around the fringe of the Elkhorn Range, there will be more evidence of activity, as seen from the trail, than in other alternatives. With all other alternatives, the views from the trail will not be significantly different than at present.

Effects of Dispersed Recreation on Minerals

All of the land management areas provide dispersed recreation opportunity. New mineral, gas and oil developments are precluded only in the Hells Canyon NRA and wilderness. Management Area 6 makes exploration more difficult due to the low road density but development of valid claims is not impossible.

Table IV-3
AREA OF RECREATION OPPORTUNITY SPECTRUM CLASS BY ALTERNATIVE AT YEAR 2025 (Acres)

		A L T E R N A T I V E									
ROS Class	Recent Levels 1980-1983*	A	B	B-dep	C	C-dep	D	E	F	G	H
Nonwilderness:											
Primitive	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%	8,115 100%
Semiprimitive Nonmotorized*	269,000 100%	171,700 64%	126,800 47%	126,800 47%	154,700 58%	154,700 58%	154,700 58%	218,000 81%	205,340 76%	126,800 47%	154,700 58%
Semiprimitive* Motorized	260,200 100%	148,600 57%	128,600 49%	128,600 49%	149,900 58%	149,900 58%	149,900 58%	178,550 69%	172,820 66%	141,668 49%	149,900 58%
Roaded Natural	985,600 100%	262,300 27%	222,000 23%	222,000 23%	237,100 24%	237,100 24%	234,700 24%	246,737 25%	220,327 22%	223,832 23%	237,100 24%
Roaded Modified	242,100 100%	1,174,300 485%	1,279,500 529%	1,279,500 529%	1,215,200 502%	1,215,200 502%	1,217,600 503%	1,112,600 460%	1,157,400 478%	1,264,600 522%	1,215,200 502%
Rural	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%	1,500 100%
Subtotal	1,766,515	1,766,515	1,766,515	1,766,515	1,766,515	1,766,515	1,766,515	1,765,502	1,765,502	1,766,515	1,766,515
Wilderness											
Primitive (Trailed)	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000
Semiprimitive	71,700	71,700	71,700	71,700	71,700	71,700	71,700	72,713	72,713	71,700	71,700
Subtotal	582,700	582,700	582,700	582,700	582,700	582,700	582,700	583,713	583,713	582,700	582,700
Grand Total	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215	2,349,215

*Some lands which provided semiprimitive recreation opportunities during the 1980-83 period will have been developed (roaded) prior to plan implementation. These lands will provide roaded natural or roaded modified recreation opportunities regardless of alternative.

Table IV-3a
PROJECTED RECREATION OPPORTUNITY SUPPLY BY
RECREATION OPPORTUNITY SPECTRUM CLASS AND ALTERNATIVE FOR YEAR 2025
(Recreation Visitor Days)

		ALTERNATIVES								
	Current Supply	A	B, D-Dep	C, C-dep	D	E	F	G	H	Demand at 2025
Nonwilderness										
Primitive	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	11,000
Semiprimitive Nonmotorized	322,800	206,000	155,000	187,000	187,000	261,000	245,000	155,000	187,000	216,000
Semiprimitive Motorized	573,700	327,000	281,000	333,000	333,000	396,000	379,000	310,000	333,000	474,000
Roaded Natural	4,925,000	1,310,700	1,109,300	1,131,700	1,160,000	1,247,200	549,300	1,313,900	1,131,700	1,568,000
Roaded Modified	1,209,800	5,867,300	6,377,700	5,800,300	6,018,000	5,623,800	2,885,700	6,109,100	5,800,300	1/
Rural	172,700	172,700	172,700	172,700	172,700	172,700	172,700	172,700	172,700	187,000
Subtotal	7,211,000	7,890,700	8,102,700	7,631,700	7,877,700	7,707,700	4,238,700	8,067,700	7,631,700	2,456,000
Wilderness										
Semiprimitive	157,900	157,900	157,900	157,900	157,900	158,500	158,500	157,900	157,900	162,000
Primitive (trailed)	212,900	212,900	212,900	212,900	212,900	212,900	212,900	212,900	212,900	54,000
Subtotal	370,800	370,800	370,800	370,800	370,800	371,400	371,400	371,400	371,400	216,000
Total	7,581,800	8,261,500	8,473,500	8,002,500	8,248,500	8,079,100	4,610,100	8,439,100	8,003,100	2,672,000

1/ Not differentiated from roaded natural.

Effects of Dispersed Recreation on Other Resources

Management Area 6 ensures that undeveloped, dispersed recreation values are retained. It provides a "backcountry" atmosphere, offering many of the recreation opportunities found in wilderness but without the restrictions such as prohibitions on motorized equipment. In comparison with timber management and grazing activities, the impacts of dispersed recreation use on other resources are relatively inconsequential. Exceptions are occasional adverse effects on soil by off-road vehicles and recreational livestock. In either case administrative tools are available to correct problems as they arise. Control of off-road vehicle use is accomplished through the annual Forest Travel Plan and supporting regulations.

Management Area 6 may provide a source of insects and diseases that can infect adjoining timber stands. However, what is often considered to be the most significant impact is the removal of land from the regulated timber harvest base. Annual timber production foregone, by alternative, from Management Area 6 is shown in Table IV-4.

Table IV-4
TIMBER PRODUCTION FOREGONE AS A RESULT OF MANAGEMENT AREA 6
(MMCF Per Year)

A	B	B-dep	C	C-dep	D	E	F	G	H
1.75	0.00	0.00	1.01	1.01	1.01	3.05	2.15	0.00	1.01

Landscape Appearance

Effects of Alternatives on Visual Quality

The most significant changes in visual quality occur within the areas managed for timber, i.e., Management Areas 1, 2, 3, or 18. When unmanaged timber stands are converted to managed conditions, the landscape takes on a different appearance. The managed area becomes a mosaic of relatively small (usually less than 40 acres) even-aged stands of varying stand ages. Few trees over 20 inches persist except along riparian zones (stream bottoms) or where special visual quality objectives are established.

In the array of alternatives presented in this DEIS the visual quality objectives vary by alternative. That is, the areas where special constraints are used to reduce the visual effects of management's impact vary by alternative. This is illustrated in Tables IV-5 and IV-5a which display the visual condition which can be expected to result from implementation of the different alternatives. The current visual condition is presented for comparative purposes. As can be seen in the tables, Alternatives B, B-departure, and E which employ relatively low visual quality objectives (VQO's), would eventually lower the visual condition of some viewsheds. (The Level 1 viewsheds are the more critical on the Forest and can be found in Figure IV-1.) The remaining alternatives would provide relatively high visual conditions for the foreseeable future.

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Table IV-5
EXISTING AND PROJECTED VISUAL CONDITION OF LEVEL 1 VIEWSHEDS BY ALTERNATIVE 1/

Viewshed 1/	Map Code	National Forest Acres	1984 Existing Visual Condition 2/	Visual Quality Levels 6/	Projected Condition at 2000 ALTERNATIVES									
					A	B	B-dep	C	C-dep	D	E	F	G	H
Grande Ronde River Corridor	1	6,789	1	1	1	2	3	1	1	1	1	1	2	1
Highway 3 Corridor	2	14,162	1	1	1	2	3	1	1	1	2	1	2	1
Bear Creek	3	2,235	1	1	1	2	3	1	1	1	2	1	2	1
Lostine Canyon	4	22,189	1	1	1	2	3	1	1	1	1	1	2	1
Wallowa Face	5	28,470	1	1	1	2	3	1	1	1	2	1	2	1
Wallowa Mtn. Road	6	27,841	1	1	1	3	3	1	1	1	3	1	3	1
North Pine Road	7	10,394	1	1	1	1	1	1	1	1	1	1	1	1
Upper Imnaha	8	8,686	1	1	1	1	1	1	1	1	1	1	1	1
Imnaha Corridor	9	27,199	1 9/	1	1	1	1	1	1	1	1	1	1	1
Lower Imnaha	10	24,575	1	1	1	1	1	1	1	1	1	1	1	1
Pittsburg Landing Road	11	10,906	1	1	1	1	1	1	1	1	1	1	1	1
Hells Canyon Road	12	21,032	2 11/	1	2	2	2	2	2	2	2	2	2	2
Pine Valley Face	13	36,527	1	1	1	3	3	1	1	1	3	1	3	1
Cornucopia Road	14	15,143	2	1	1	3	3	1	1	1	3	1	3	1
East Eagle	15	9,251	1	1	1	3	3	1	1	1	2	1	3	1
Main Eagle	16	11,551	1	1	1	2	3	1	1	1	2	1	2	1
West Eagle	17	10,963	2	1	2 5/	2	3	2 5/	2 5/	2 5/	2	2 5/	2	2 5/
Eagle Drive	18	4,263	1	1	1	2	3	1	1	1	2	1	2	1
Moss Springs	19	2,354	2	1	2 5/	2	3	1	1	2	2	1	2	1
Mt. Fanny Face	20	3,443	1	1	1	2	3	1	1	1	2	1	2	1
Duck Creek Road	21	6,522	1	1	1	1	1	1	1	1	1	1	1	1
Fish Lake	22	6,481	2	1	1	2	3	1	1	1	2	1	2	1
I-84 Corridor	23	4,975	1	1	1	2	3	1	1	1	2	1	2	1
Little Sheep Creek	24	5,227	1	1	1	2	3	1	1	1	2	1	2	1
Mt. Emily Face	25	3,495	1	1	1	2	3	1	1	1	2	1	2	1
Ukiah Highway	26	7,647	1	1	1	2	3	1	1	1	3	1	2	1
Grande Ronde River Road	27	5,923	1	1	1	2	3	1	1	1	3	1	2	1
Anthony Lakes Road	28	6,088	1	1	1	2	3	1	1	1	2	1	2	1
Anthony Lakes Basin	29	8,136	2 10/	1	2	2	2	2	2	2	2	2	2	2
North Fork John Day	30	8,482	3	2 7/	2 4/	3	3	1 5/	1 5/	1 5/	2 3/	1 5/	3	1 5/
Grand View Drive	31	1,344	1	1	1	2	3	1	2	1	2	1	2	1
Hat Point Road	32	8,985	1	1	1	1	1	1	1	1	1	1	1	1
Sumpter Valley	33	68,231	2 8/	1	1	2	3	1	1	1	2	1	2	1
Elkhorn Face	34	51,885	1	1	1	2	3	1	1	1	2	1	2	1
Whitney-Tipton Road	35	42,240	1	1	1	2	3	1	1	1	2	1	2	1
North Fork Burnt River	36	3,027	1	1	1	2	3	1	1	1	2	1	2	1
Highway 26	37	4,235	1	1	1	2	3	1	1	1	2	1	2	1
South Fork Burnt River	38	1,583	2	1	1	2	3	1	1	1	2	1	2	1
Northern West Rim	39	10,496	1	1	1	1	1	1	1	1	1	1	1	1
North Elkhorn Face	40	31,281	2	1	1	2	3	1	1	1	3	1	2	1
Total		584,256												

1/ Sensitivity level 1 viewsheds (key visual areas) have been identified by name on a map (Figure IV-1) showing their boundaries.
2/ 1 = Essentially natural appearance
2 = Somewhat altered appearance
3 = Heavily altered appearance
3/ Heavily altered in the short-term because of lodgepole pine mortality and salvage but somewhat altered in long-term.
4/ Heavily altered in the short-term because of lodgepole pine mortality and salvage but essentially natural in the long-term.
5/ Somewhat altered in the short-term but essentially natural in the long-term.
6/ The Visual Quality Level is a product of the Visual Management System. It is a measure of the casual National Forest visitor's concern for the scenic quality of a particular viewshed corridor or use area. The Visual Quality Objective (management direction) may or may not be the same.
7/ Level 2 will change to Level 1 under Wild and Scenic River Designation.
8/ Railroad logged and gold dredged up to 1955, also dam and reservoir.
9/ Rural character.
10/ Ski area development.
11/ Dam and reservoir in a nationally designated area.

EXISTING AND PROJECTED VISUAL CONDITION OF LEVEL 2 VIEWSHEDS BY ALTERNATIVE 1/

Code 9/	Viewshed 1/	National Forest Acres	1982 Existing Visual Condition 2/	Visual Quality Level 3/	Projected Condition at 2000 ALTERNATIVES A	B	B-dep	C	C-dep	D	E	F	G	H
A	Spring Creek	4,864	4	2	2 7/	3	4	2 7/	3	2 7/	4	2 7/	4	2 7/
B	Frog Heaven	1,766	2	2	2	3	4	2	3	2	3	2	4	2
C	Tower Mtn. Face	17,766	2	2	2	3	4	2	3	2	4	2	4	2
D	Grande Ronde Ladd	19,507	2	2	2	3	4	2	3	2	4	2	4	2
E	Hoo Doo Way	9,932	4	2	2	3	4	2	3	2	4	2	4	2
F	Trout Davis	2,790	3	2	2 7/	3	4	2 7/	3	2 7/	4	2 7/	4	2 7/
G	Crane Flat	6,374	4	2	2 7/	3	4	2 7/	3	2 7/	4	2 7/	4	2 7/
H	Sumpter-Granite (2 parts)	15,155	4	2	2 7/	3	4	2 7/	3	2 7/	4	2 7/	4	2 7/
I	Greenhorn	6,092	2	2	2	3	4	2	3	2	4	2	4	2
J	Rail Gulch	4,096	2	2	2	3	4	2	3	2	4	2	4	2
K	West Camp	6,579	4	2	2	3	4	2	3	2	4	2	4	2
L	East Camp	1,715	2	2	2	3	4	2	3	2	3	2	4	2
M	Dooley Mtn.	8,780	2	2	2	3	4	2	3	2	4	2	4	2
N	Bourne	3,020	2	2	2	3	4	2	3	2	4	2	4	2
O	North Fork John Day	8,482	4 4/	2 5/	2 7/	3	4	1 8/	1 8/	1 8/	3	1 8/	4	1 8/
P	Five Points Emily	5,657	2	2	2	3	4	2	3	2	3	2	4	2
Q	Emily Divide	2,176	2	2	2	3	4	2	3	2	3	2	4	2
R	Beaver Meadow	1,971	3	2	2	3	4	2	3	2	4	2	4	2
S	West Rim Minam	10,547	2	2	2	3	4	2	3	2	4	2	4	2
T	Catherine Creek	21,299	2	2	2	3	4	2	3	2	3	2	4	2
U	Balm Reservoir	9,344	2	2	2	3	4	2	3	2	4	2	4	2
V	Lower Eagle	6,988	2	2	2	3	4	2	3	2	3	2	4	2
W	McBride Summit	5,478	2	2	2	3	4	2	3	2	3	2	4	2
X	Forshey	2,227	2	2	2	3	4	2	3	2	3	2	4	2
Y	Charolais	7,291	2	2	2	3	4	2	3	2	4	2	4	2
Z	Wellamotkin	16,744	2	2	2	3	4	2	3	2	3	2	4	2
AA	Crow Creek	3,993	2	2	2	3	4	2	3	2	3	2	4	2
BB	Chesnimnus	2,867	2	2	2	3	4	2	3	2	4	2	4	2
CC	Cold Springs Ridge	25,369	2	2	1	1	1	1	1	1	1	1	1	1
DD	Nezperce Rim	30,284	4	2 6/	1	1	1	1	1	1	1	1	1	1
EE	Southern West Rim	21,196	3	2	1	1	1	1	1	1	1	1	1	1
FF	Lake Fork	20,275	2	2	2	3	4	2	3	2	1	2	4	2
GG	Harl Butte	8,576	2	2	2	3	4	2	3	2	3	2	4	2
	Total	319,200												

1/ Sensitivity level 2 viewsheds (secondary visual areas) have been identified by name on maps available at the Forest Supervisor's office in Baker. Level 2 travel routes are listed in Appendix K.

2/ 1 = Essentially natural appearance
2 = Somewhat altered appearance
3 = Moderately altered appearance
4 = Heavily altered appearance

3/ The visual quality level is a product of the visual management system. It is a measure of the casual National Forest visitor's concern for the scenic quality of a particular viewshed corridor or use area. The visual quality objective (management direction) may or may not be the same.

4/ This is 1985 visual condition as viewed from Road 73, Elkhorn Loop Drive.

5/ Level 2 will change to Level 1 under Wild and Scenic River Designation (Recreational).

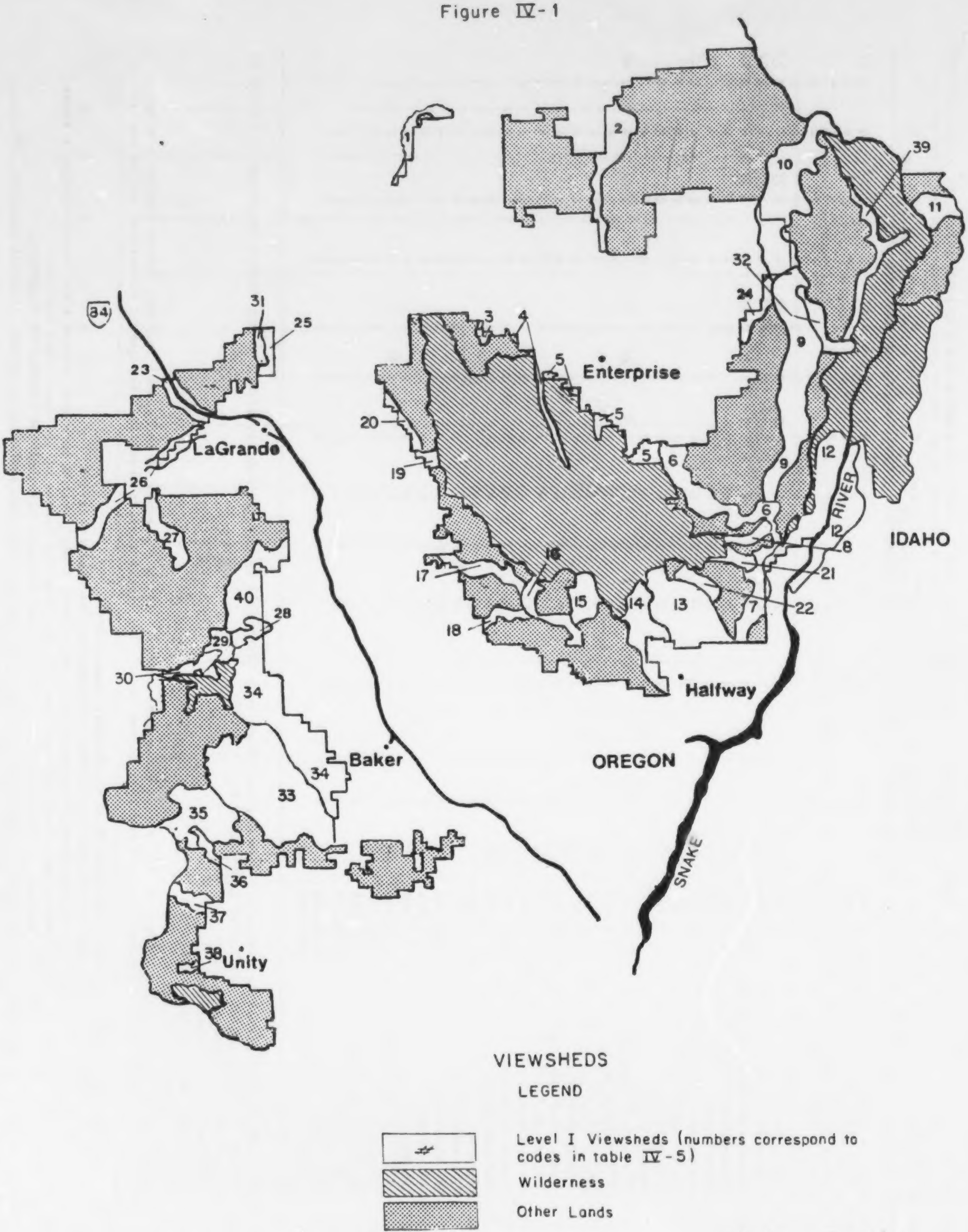
6/ Much of the Nezperce viewshed lies in the Snake River corridor. This Level 2 duplication is meant to deal with Forest visitor's views from the secondary motorized travel routes and viewpoints not readily seen from the bottom of the deep river corridor.

7/ Heavily altered in the short-term because of lodgepole pine mortality and salvage, but somewhat altered in long-term.

8/ Heavily altered in the short-term because of lodgepole pine mortality and salvage, but essentially natural by about the year 2000 as viewed from the river and by 2010 as viewed from Road 73, the Elkhorn Loop Drive.

9/ Code refers to descriptions in Appendix K.

Figure IV-1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37
38
39
40
Enterprise
LaGrande
Halfway
Baker
Unity
OREGON
IDAHO
SNAKE
RIVER
VIEWSHEDS
LEGEND
# Level I Viewsheds (numbers correspond to codes in table IV-5)
▨ Wilderness
░ Other Lands

8/22/85 LDH

Effects of Maintaining Visual Quality Objectives on Other Resources

Besides retaining aesthetically pleasing landscapes, visual quality objectives (VQO's) can have a variety of effects on other resources. The VQO's of retention and partial retention will often provide large trees and occasional snags suitable for cavity-nesting birds and mammals. Such habitat may not be available in other areas. Therefore, those alternatives with more acres of retention and partial retention VQO's, (Alternatives A, C, D, F and H) will, in general, provide greater benefits to cavity nesting wildlife than will those with fewer acres (Alternatives B, G or E).

The Visual Quality Objective of partial retention can make it more difficult to locate rock or gravel excavation areas. Expense is also involved in attempting to make the disturbed areas unapparent to Forest travelers. Maintaining visual quality may mean reduction in grazing use along particularly attractive stream courses. The most obvious impact, however, is on timber management. Table IV-6 shows acres of retention and partial retention visual quality objectives by alternative, and the timber volumes foregone due to maintenance of visual quality objectives, by alternative.

Table IV-6
ACRES OF VISUALLY SENSITIVE VIEWSHEDS RETAINING ESSENTIALLY NATURAL APPEARANCE AND TIMBER PRODUCTION FOREGONE DUE TO ACHIEVEMENT OF VISUAL QUALITY OBJECTIVES

	ALTERNATIVE									
	A	B	B-dep	C	C-dep	D	E	F	G	H
Thousands of Acres	518	88	88	529	529	505	117	529	88	529
Timber Production Foregone (MMCF/Yr)	1.47	0.42	0.42	1.40	1.40	1.40	0.38	1.36	0.36	1.39

Air Quality

Effects of Alternatives on Air Quality

The primary effects on air quality on the Wallowa-Whitman National Forest are from off-Forest sources which are not usually within control of Forest managers. These sources include nearby agricultural field burning, western Oregon logging slash burning, and industrial smoke. It also includes dust from northern Oregon agricultural areas and smoke from local, off-Forest industrial operations. This smoke can impair visibility, reducing enjoyment of scenic vistas.

On-Forest sources of air quality degradation can be smoke from burning logging slash, prescribed burning for other resource purposes such as range management, wildfire, and dust from roads. The smoke from slash burning is the most significant but can be mitigated by confining burning to periods when atmospheric conditions cause rapid smoke dispersal and fuels are at the appropriate moisture content (see Standards and Guidelines, Appendix D). In general, smoke will be created in proportion to the amount of slash created from timber harvesting on the Forest. There would be more smoke created in Alternative B, a commodity-oriented alternative, than with Alternative F, a more amenity-oriented alternative.

It is doubtful that the differences among alternatives would be noticeable during most years. Table IV-6a illustrates the approximate levels of particulates that will result from on-Forest prescribed burning. In any event, the difference could not be predicted with reasonable degrees of accuracy. Experience to date indicates that air quality degradation from on-Forest sources will not be an important factor regardless of alternative, as long as the possible cumulative effects of burning by other local landowners is considered and coordinated.

Table IV-6a
TOTAL SUSPENDED PARTICULATES (TSP)
RESULTING FROM PRESCRIBED BURNING BY
ALTERNATIVE IN THE FIRST DECADE
Tons Per Year*

A	B	B-dep	C	C-dep	D	E	F	G	H
5,662	5,498	7,002	5,474	7,655	5,610	5,194	4,271	4,161	4,288

* Assumes 16.5 tons of fuel per acre with 50 pounds of TSP per ton of fuel. Acres of fuel treated varies from a high of 18,600 acres per year (Alternative C-departure) to 10,100 acres per year (Alternative G). Average acres burned from 1980 through 1984 were 15,000 which produced an estimated 6,187 tons of TSP annually.

In recent years, smoke from wood-burning stoves has noticeably increased in communities within convenient driving distance from the National Forest. Since much of the fuelwood comes from the National Forest, this can be considered an adverse indirect effect of National Forest activities. Projections do not indicate significant differences in fuelwood sales by alternative for the foreseeable future, so effects from home wood-burning smoke are not likely to vary.

Wild and Scenic Rivers

Effects of Alternatives on Potential Wild and Scenic Rivers

Because of the nature of the streams being considered, the effects of implementing any of the alternatives are not great. Those streams within established wilderness are likely to remain in a wild state because of wilderness provisions, regardless of their inclusion in the National Wild and Scenic River System.*

Other streams outside wilderness are within areas that are recognized for their visual sensitivity, are important anadromous fish streams, or are within important recreational areas. Of the approximately 138 miles of stream being considered, some 34 miles lie within commercial forest land outside wilderness. The potential for development along most of the streams is low, regardless of whether or not protection is provided by legislation. The exceptions are Eagle Creek where numerous parcels of private land provide potential for development as evidenced by existing private cabins, and the North Powder. The North Powder would lose the characteristics that make it eligible for wild river consideration if Alternatives B, B-departure, or G were implemented due to scheduling of the area for timber harvest.

None of the streams under consideration have been recognized by the Pacific Northwest River Basins Commission for power generating facilities of 5,000 kilowatts or larger. Although several of the inventoried streams have potential for small hydroelectric projects, most are too remote, or provide insufficient waterfall to be practical. An exception is the Grande Ronde River where a power generating dam was proposed in 1982. It was to be located approximately four miles north of the mouth of the Wallowa River on private land and would impound water on the National Forest and private land.

The Grande Ronde is popular for nonmotorized boating, particularly rafting and canoeing, with trips often originating at the confluence of the Minam and Wallowa and ending on the lower Grande Ronde near Troy. The proposed dam would have been near the midway point of typical raft trips and would have greatly reduced the float boat potential of the Wallowa and the Grande Ronde Rivers. Alternatives C, C-dep, E, F, and H, which recommend placing the Grande Ronde in the Wild and Scenic Rivers System, would provide for protection of the free-flowing nature of the stream where it is within the National Forest.

Effects of Wild and Scenic River Designation on Other Resources

With any of the alternatives, the resource tradeoffs from adding rivers to the National Wild and Scenic Rivers System are relatively low. Wild and Scenic designation would preclude the opportunity to develop the hydroelectric potential of a major portion of the Grande Ronde River.

Designation of the North Powder River as wild would preclude further mineral development although the likelihood of development appears low.

Roadless Areas

Effects of the Alternatives on Roadless Areas

Throughout the Forest there are undeveloped areas which will be altered as road construction and timber harvesting occur. These are areas formerly inventoried for potential wilderness during the two Roadless Area Reviews and Evaluations (RARE and RARE II). Because of the extensive areas which contain no or low timber values, sizeable portions of the roadless areas will remain undeveloped in the preferred alternative and several others. The characteristics which made them eligible for wilderness consideration will remain for the foreseeable future. In those areas where timber is to be managed, wilderness characteristics will be largely foregone, primarily because the imprint of man will be noticeable. The imprints may be tree stumps, logging slash, skid trails, log landings, roads, or any combination of these factors. Trail systems which currently provide access for recreational enjoyment of some of the areas will occasionally be disrupted or replaced by roads.

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* Wilderness does not specifically preclude construction of dams while wild and scenic river status does.

In some areas where timber will be removed by helicopter, many of the areas' roadless characteristics will remain but man's imprint will be noticeable.

Table IV-7 shows the total acres of roadless area that will remain roadless at the year 2000 with each alternative. The figures do not include acres now in wilderness as a result of the Oregon Wilderness Act of 1984. See Appendix C for descriptions of roadless areas and an explanation of how each roadless area is allocated within each alternative.

Livestock Grazing

Effects of Alternatives on Livestock Grazing

Permitted livestock grazing occurs on most of the lands suitable for grazing on the Forest and is projected to continue at varying levels under all alternatives. The Forest currently issues permits for some 186,000 AUM's of livestock grazing on National Forest lands. This does not include approximately 13,000 AUM's from intermingled private lands which have been waived to the Forest Service for management.

Table IV-7
PROJECTED UNDEVELOPED AREA AT YEAR 2000*

ALTERNATIVE	ACRES
A	360,800
B	331,700
B-dep	311,400
C	358,700
C-dep	358,700
D	355,300
E	467,700
F	400,000
G	346,600
H	358,700

* Figures include acres of roadless area in management areas which permit development for timber harvest but, due to economic conditions, are unlikely to be developed. Included are portions of roadless areas such as Tope Creek and Deadhorse. See Table II-3a for these particular acreage estimates.

An RPA livestock grazing target of 206,000 AUM's has been tentatively assigned to the Forest for the period 1984-1990. Table IV-8 shows how well each of the alternatives achieves the target and how they compare with each other.

Livestock grazing on the National Forest accounts for an average of 0.53 jobs and $5,900 of personal income per 1000 AUM's. Therefore, it is providing approximately 100 jobs at present, and would range from a high of 120 with Alternative B-departure to a low of 84 with Alternative F.

Table IV-8
PERMITTED LIVESTOCK FORAGE ALLOCATION BY ALTERNATIVE
(Thousands of AUM's Per Year, First Decade)

Target	A	B	B-dep	C	C-dep	D	E	F	G	H
	186	207	227	207	207	212	181	159	186	177

Effects of Livestock Grazing on Soil, Water, and Riparian Vegetation

Because of the terrain, narrow creek bottoms interspersed with high steep-sided ridges or plateaus, cattle tend to concentrate along creeks and canyon bottoms. This can result in overuse of forage, soil erosion, and damage to streambanks. Livestock grazing has contributed locally to streambank instability, channel cutting, sedimentation of fish spawning gravels and reduction of deciduous stream shade. This affects the productivity of spawning gravels, the pool-riffle structure and shading of smolt rearing areas. All alternatives seek to reduce these problems.

Livestock contribute to soil compaction which can change the soil structure, affect water absorption and holding capacity and inhibit plant growth. Compaction is minimized by insuring that grazing lands are relatively dry before grazing occurs but naturally moist meadows receive damage regardless of when they are grazed. To avoid all such damage would be possible only through elimination of grazing of both wildlife and livestock.

Livestock also contribute to water contamination by being in or close to streams, lakes, ponds and springs. Such effects are virtually unavoidable if many of the more productive forage areas are to be grazed.

Effects of Livestock Grazing on Recreation

Effects of livestock grazing on recreation vary as the effects are perceived by different people. For example, while some will view a band of sheep as an interesting sight, others are offended. Most livestock grazing is compatible with recreation use and problems are usually avoidable by excluding livestock from popular recreation sites or areas. Regardless of alternative, conflicts will continue to occur where livestock and the recreation public are mixed. In those alternatives with higher grazing levels, there would be greater conflict than there would be in alternatives with lower grazing levels. However, it is unlikely the conflicts would be appreciably different since grazing will not occur in popular recreation areas regardless of alternative. Livestock are removed from most allotments prior to hunting season when the Forest receives the most recreation use in dispersed areas.

Effects of Livestock Grazing on Wildlife

Livestock grazing results in few conflicts with most wildlife species. But, since livestock have considerable dietary overlap with elk, they will often consume or damage forage that elk would otherwise eat. As recently as 1981 competition between livestock grazing and elk on summer range was thought to be a serious problem on some parts of the Forest. Since that time the conflicts have apparently diminished. This could be the result of three years of above normal precipitation and resultant forage increase. Perhaps the conflicts were more perceived than real. The entire matter of elk-livestock competition is uncertain throughout the Northwest (Lyon 1985). The degree of competition on the Wallowa-Whitman is also difficult to measure, but it can be said with reasonable certainty that where use by both classes of animals approaches the capacity of an area, competition problems are likely to develop. There are indications that competition between elk and livestock could be a problem on some game management units in Alternatives B, B-departure, and D if elk remain at present levels.

Livestock grazing can benefit big game by maintaining the form of bunchgrass plants, preventing them from becoming "wolf plants", thereby making the plants more easily used by both classes of animals. Water developments intended for livestock often benefit many species of wildlife.

Domestic sheep host diseases which may also infect bighorn sheep (Aney 1985). Where ranges overlap, these diseases can be a greater problem for bighorn sheep than direct competition for forage. The Oregon State Department of Fish and Wildlife, in cooperation with the Forest Service, is currently studying this problem. Possible solutions include vaccination of domestic sheep or elimination of one class of sheep from the range of the other.

Because of predation by bear, cougar and coyotes on livestock on the open range, predators are sometimes destroyed. This is an adverse effect on wildlife and makes fewer animals available for hunting and viewing by the recreational user.

Effects of Livestock Grazing on Timber

Livestock grazing and timber management are generally compatible and often complementary. The exception is during timber stand reestablishment when livestock can damage tree seedlings through nipping or trampling. Such problems are sometimes avoided by excluding livestock from timber stands during the critical period. Once the trees are established and large enough to be obvious to the livestock, grazing will tend to reduce vegetation competition and may aid tree growth. In those alternatives which require higher levels of tree planting (C, D, B-dep, C-dep) this would be a problem and would require more expenditures for plantation protection fencing or temporary exclusion of livestock from areas of newly planted trees.

Effects of Livestock Grazing on Protection

Livestock use of forage that would otherwise die and become a fire hazard is a beneficial indirect effect of grazing.

Timber Management

Effects of Alternatives on Timber Management

Activities associated with timber management are more noticeable, and have greater environmental effect, negative and positive, than the management of any other resource. The production of timber also contributes more to the local economy, in personal income and payments to local governments, than all other National Forest management activities combined. These contributions include direct jobs in timber harvesting, road construction, tree planting, tree thinning, slash disposal, lumber or pulpwood chip manufacturing as well as numerous indirect jobs in equipment sales and repair, restaurants, service stations, schools, etc. On the average, each one million board feet of timber harvested from the National Forest produces 11 local jobs. Twenty-five percent of the net timber receipts (along with other receipts) are remitted to local counties for schools and roads and the remaining receipts contribute to the National economy. Table IV-9 illustrates annual timber production levels for each alternative for five decades.

Many lumber mills in the area were originally designed to process large diameter material. This requires relatively large trees. For this reason, the sawtimber data in Table IV-9 separate lodgepole pine, which is normally of small diameter and more suited for paper production, from other species from which veneer or lumber may more easily be obtained. The age of existing large timber (over 20 inches in diameter at breast height) of all species is normally over 200 years (many over 300) and has continued to grow at declining growth rates for 100 years or more. In the future, if wood fiber production levels are to remain relatively high, trees will need to be harvested at much younger ages. Therefore, logs will be much smaller and factories will need to be converted to process this material. The volume of large timber will decline gradually but is likely to remain a major part of the harvest for 40 or more years, depending on the rate of harvest which varies by alternative.

All harvest schedules were calculated on the Wallowa-Whitman National Forest administrative area. As a result, the harvest scheduled for the separate proclaimed Wallowa and Whitman National Forests will, in all alternatives, show the irregular flow pattern for each Forest as illustrated by Figure B-1, Appendix B, for the current direction benchmark. This flow pattern represents a departure from nondeclining evenflow if the base sale schedule were calculated for each proclaimed National Forest. Multiple resource objectives are established for the Wallowa-Whitman National Forest as an administrative entity in all alternatives. Except for the departure alternatives, nondeclining evenflow is satisfied on the Wallowa-Whitman National Forest administrative area in all alternatives.

Table IV-9
PROPOSED TIMBER HARVEST PER YEAR BY ALTERNATIVE

Decade	Component	Recent Levels 1979-1983		A		B		B-dep		C		C-dep		D		E		F		G		H	
		MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF
	Sawtimber																						
1	P,D,F,S,L 1/	27.1	155	21.8	121	24.7	138	28.1	157	23.3	129	27.7	152	23.4	130	23.0	128	14.6	80	20.3	112	19.3	106
	LP 2/	1.5	4	6.4	18	7.2	20	7.9	22	5.0	14	8.8	25	6.8	19	6.1	17	6.9	20	5.2	15	5.9	17
	Roundwood 3/ 4/	9.6		7.8		8.8		9.9		7.8		10.1		8.3		8.0		5.9		7.0		6.9	
	Fuelwood 4/	5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/	43.2	159	41.0	139	45.7	158	50.9	179	41.1	143	51.6	177	43.5	149	42.1	145	32.4	100	37.5	127	37.1	123
	Sawtimber																						
2	P,D,F,S,L 1/			23.2	128	26.0	143	36.0	198	21.4	118	20.9	115	23.7	148	24.3	134	18.0	99	25.2	139	20.6	113
	LP 2/			5.0	14	5.9	17	1.2	3	6.9	19	5.7	16	6.5	9	4.8	13	3.5	10	0.3	1	4.6	13
	Roundwood 3/ 4/			6.5		7.4		8.6		6.5		6.2		7.0		6.7		5.0		5.9		5.8	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			39.7	142	44.3	160	50.8	201	39.8	137	37.8	131	42.2	157	40.8	147	31.5	109	36.4	140	36.0	126
	Sawtimber																						
3	P,D,F,S,L 1/			26.7	147	31.7	174	39.5	217	28.1	155	26.5	146	30.1	165	28.9	159	17.0	94	25.5	139	24.9	137
	LP 2/			1.5	4	0.2	1	0.2	1	0.2	1	0.1	1	0.1	1	0.2	1	4.5	13	0.1	1	0.3	1
	Roundwood 3/ 4/			5.2		5.8		7.3		5.2		4.9		5.5		5.3		3.9		4.7		4.6	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			38.4	151	42.7	175	52.0	218	38.5	156	36.5	147	40.7	166	39.4	160	30.4	107	35.3	140	34.8	138
	Sawtimber																						
4	P,D,F,S,L 1/			20.2	111	29.2	161	24.6	135	22.6	124	23.3	128	26.6	155	25.3	139	17.3	95	20.8	114	24.1	133
	LP 2/			8.0	22	2.7	8	16.4	46	5.7	16	3.3	10	3.6	6	3.8	11	4.2	12	4.7	13	1.1	3
	Roundwood 3/ 4/			5.2		5.8		7.5		5.2		4.9		5.5		5.3		3.9		4.7		4.6	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			38.4	133	42.7	169	53.5	181	38.5	140	36.5	138	40.7	161	39.4	150	30.4	107	35.2	127	34.8	136
	Sawtimber																						
5	P,D,F,S,L 1/			22.2	122	26.7	147	24.4	134	21.3	117	21.3	117	22.4	152	21.8	110	20.8	114	21.6	119	23.0	126
	LP 2/			6.0	17	5.2	15	16.6	47	7.0	20	5.3	15	7.8	7	7.3	21	0.7	1	3.9	11	2.2	6
	Roundwood 3/ 4/			5.2		5.8		7.5		5.2		4.9		5.5		5.3		3.9		4.7		4.6	
	Fuelwood 4/			5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0	
	Total 5/			38.4	139	37.7	162	53.5	181	38.5	137	36.5	132	40.7	159	39.4	131	30.4	115	35.2	130	34.8	132

1/ Tree species other than lodgepole pine (P - ponderosa pine, D - Douglas-fir, F - true fir, S - Engelmann spruce, L - western larch). Regulated volume - included in allowable sale quantity.

2/ Lodgepole pine exceeding five inches in diameter. Regulated volume - included in allowable sale quantity.

3/ Volume other than fuelwood or sawtimber; includes cull material, small diameter (less than five inches) material, and dead material. Unregulated volume - not included in the allowable sale quantity.

4/ No board foot volume is shown since these products are normally not sawn into boards and are not sold on a board foot basis.

5/ The total represents the Timber Sale Program Quantity.

Achievement of RPA Timber Targets

RPA board foot volume targets are assigned to the Forest through the Regional Guide using a 1:5.37 cubic foot:board foot conversion ratio. Calculated on this basis, timber outputs are compared to achievement of RPA targets for the first five decades in Table IV-10.

Table IV-10
ACHIEVEMENT OF RPA TIMBER TARGETS BY ALTERNATIVE
(Average Annual MMBF for Decades 1-5)*

RPA Target	A	B	B-dep	C	C-dep	D	E	F	G	H
220	210	229	280	211	214	223	216	167	193	191

*Includes sawtimber, roundwood and fuelwood.

Growth Rate at Year 2030

In order to respond to the President's statement and policy for RPA, each alternative considered in an environmental impact statement for a Forest land and resource management plan must include the long-term sustained yield capacity for timber. This capacity is a maximum that can be sustained from the suitable timberlands subject to the multiple-use objectives of the alternative in the provisions of the National Forest Management Act. We are directed to display the growth rate (cubic feet per year) for the preferred alternative at the year 2030. If the growth rate is less than 90 percent of the growth rate at long-term sustained yield, the additional costs and actions required to achieve the 90 percent goal, and the associated benefits and effects, are to be described. Table IV-11 compares the growth rate to the long-term sustained yield for all alternatives.

Effects of Present Net Value Objective and Real Price Increases on Base Sale Schedules

In an attempt to maximize present net value, all alternatives tend to emphasize harvest on gently sloping, more easily harvested lands in the first decade and schedule the more difficult to harvest lands in subsequent decades. This is because real prices (prices after discounting for inflation) are expected to increase at about 1 percent per year. As an example, timber that today sells for $100 per MBF will bring $164 in current day value within 50 years. Therefore, it is assumed that many timber lands that cannot be harvested or managed economically now will become economically viable in the future.

Table IV-11
GROWTH COMPARISON TO LONG-TERM SUSTAINED YIELD BY ALTERNATIVE
(MMCF per year)

Alternative	Growth at 2030	Long-Term Sustained Yield	Percent of Achievement of Long-Term Sustained Yield
A	30.1	31.8	95
B	32.0	35.5	90
B-dep	26.4	37.6	70
C (Preferred)	29.6	31.7	93
C-dep	29.0	31.2	93
D	32.5	33.8	96
E	31.6	33.2	95
F	18.0	25.5	71
G	22.5	27.0	83
H	23.8	27.7	86

However, in order to achieve the timber harvest levels specified in certain alternatives, it is necessary to harvest on lands where the costs apparently will exceed the benefits. This is the case with Alternative B-departure, which was formulated to meet the State of Oregon's recommendation for timber output levels for the Wallowa-Whitman.* It has a high timber output level but a low PNV (see Figure IV-2). This may mean that land only suitable for helicopter logging must be harvested at a point where costs exceed the timber value. This could mean the timber would have to be sold at a loss to the Federal Government, the purchaser could not realize normal profits, or perhaps no one would bid to purchase the timber.

On the other end of the spectrum, Alternative G was formulated to ensure that only timber stands on which a positive PNV could be achieved are scheduled for timber harvest. This achieves a high overall PNV for the alternative but a relatively low timber output level. The timber that is sold, however, would tend to be of high value.

Whereas harvesting in steep rugged terrain will increase costs, so too will constraints on timber management activities. Alternative B is a commodity emphasis alternative with relatively few constraints for wildlife or

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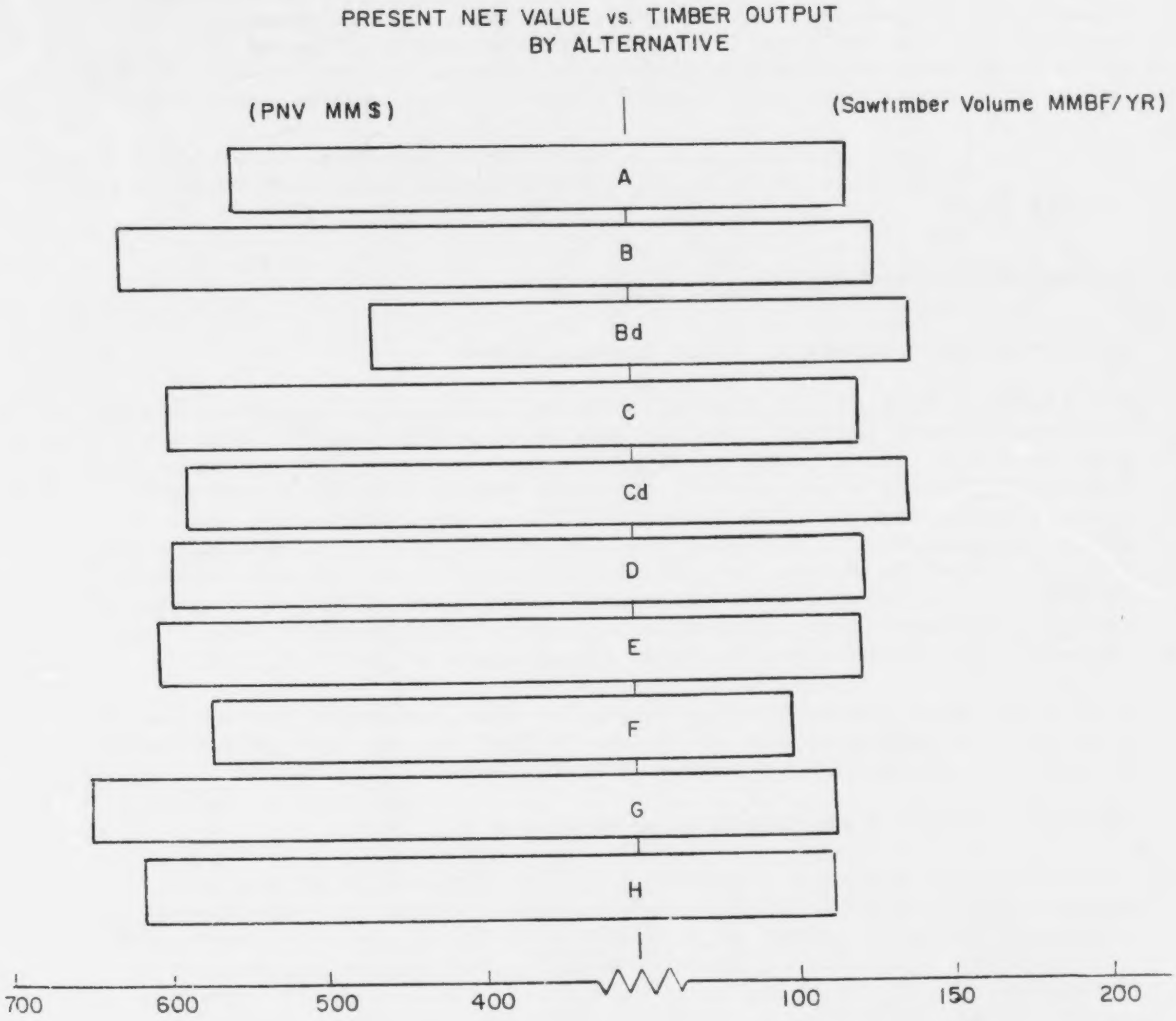
* State of Oregon, Forestry Program for the Future of Oregon, Oregon State Board of Forestry, May 1982.

Figure IV - 2


PRESENT NET VALUE vs. TIMBER OUTPUT
BY ALTERNATIVE
(PNV MM$)
(Sawtimber Volume MMBF/YR)
A
B
Bd
C
Cd
D
E
F
G
H
700
600
500
400
100
150
200

landscape management. Therefore, it is able to achieve a high timber level combined with a relatively high present net value.

Another important factor affecting PNV is the cost of establishing new stands of trees after harvesting. If it is necessary to plant trees, costs will be much higher than if we depend on natural seeding. Achieving an adequately stocked stand of trees through natural seeding may take longer--often 20 years as compared to less than five for planting for most species. This results in a longer period before the stand can again be harvested. It may also delay the harvest of adjacent stands because the first harvested site must be adequately stocked with trees 4 1/2 feet in height before the adjacent stands may be harvested (USDA Forest Service 1984). With natural seeding the opportunity to plant genetically superior, faster-growing trees is also foregone. For these various reasons, yields will average less for natural than for planted stands. Figures IV-3 and IV-3a illustrate the amount of planting by alternative over time as well as acres which are to have trees reestablished (regenerated) by other means.

For a more complete review of the relationship of economic efficiency to project-level economic analysis and the question of below-cost sales, see Chapter III.

Timber Harvest Methods

Effects of Alternatives on Timber Harvest Methods

The timber on most of the commercial forest land will be managed utilizing even-aged harvest methods. The Regional Guide and EIS specify that the even-aged silvicutural system will be the most commonly used system in the coniferous forests of the Pacific Northwest Region although uneven-aged systems may be used under specified conditions where continuous forest canopy is necessary to meet management objectives such as streamside protection, visual resources, or critical soil conditions. This management philosophy is consistent with recommended silvicultural systems for the Forest's timbered types as described in Agricultural Handbook 445, "Silvicultural Systems for the Major Forest Types of the U. S."

Within the Hells Canyon National Recreation Area, selective harvest is required. Selective harvest may be uneven-aged but may include even-aged methods such as shelterwood harvest (Crowell 1984).

Effects of Timber Harvest Methods on Resources

Consequences of even-aged harvest methods include changes in landscape appearance and impaired (or improved) habitat for some wildlife species, and increases in the percentage of lodgepole pine in the stands. These effects are discussed in detail elsewhere in this section; however, even-aged management is considered the most effective harvest method for achieving management objectives on the majority of sites. See Appendix B for a detailed discussion of this subject.

Figure IV-3

ACREAGE REFORESTED BY ALTERNATIVE, DECADE 1

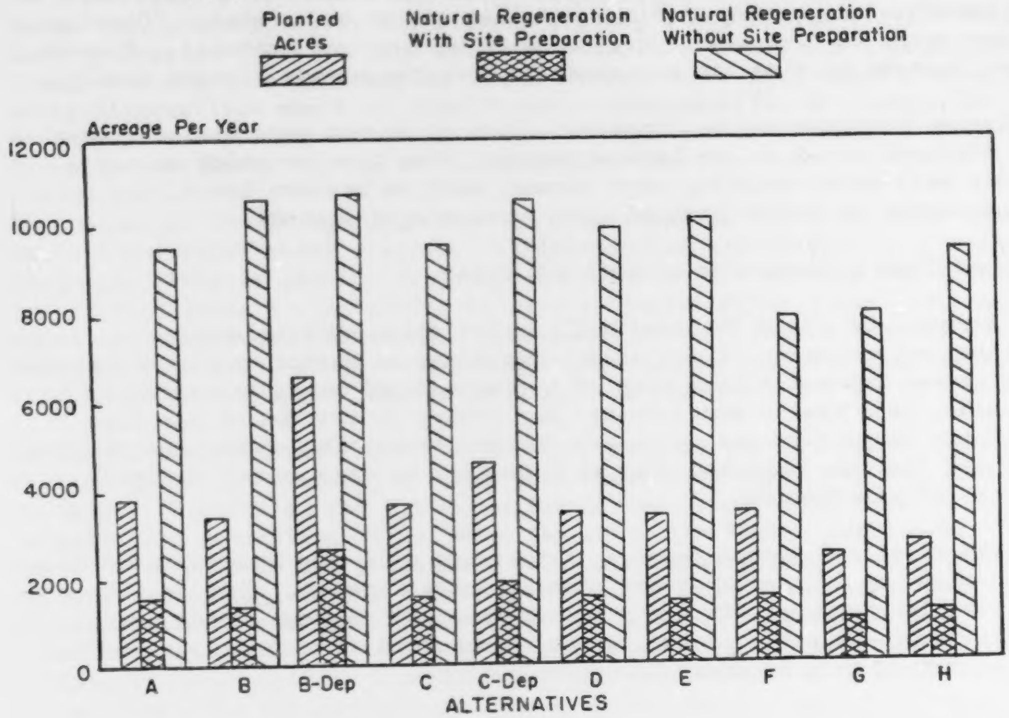
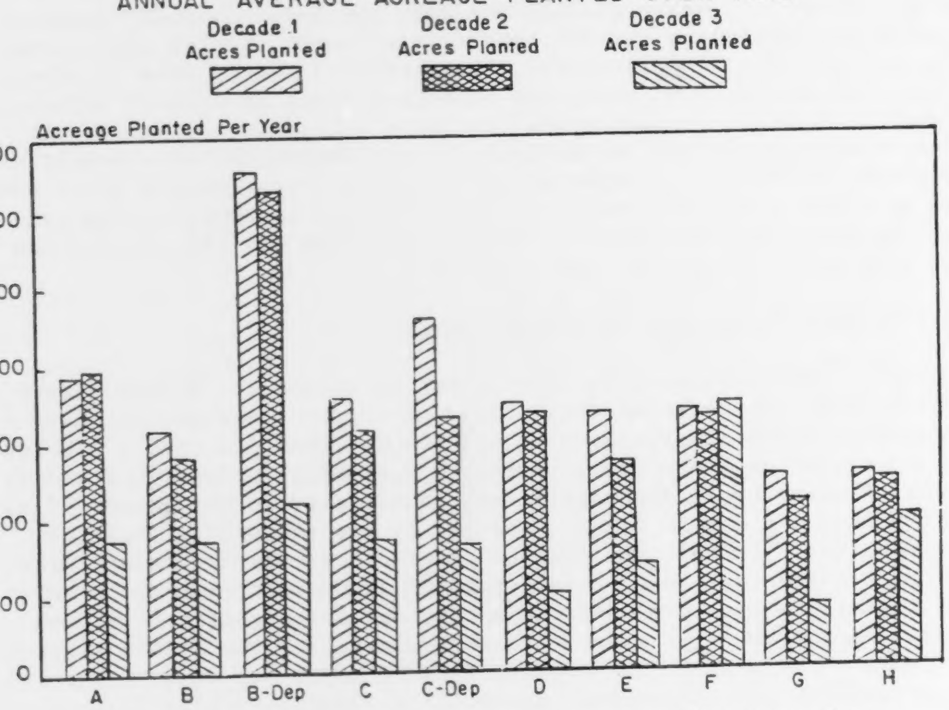


Figure IV-3a

ANNUAL AVERAGE ACREAGE PLANTED OVER TIME



Annual Average Acreage Planted by Decade (1, 2 or 5) and Alternative

When uneven-aged methods are used, trees are harvested selectively, and large, unnatural-appearing openings are less apt to be created. (Openings up to two acres in size may be created with uneven-aged methods). However, frequent harvest entries are necessary to keep the stands growing freely.

Tree disease problems may be increased since it is not possible to remove an entire diseased stand at one harvest entry. Tree species which do not reproduce well under existing tree crowns, such as western larch, may occur less frequently in stands managed under uneven-aged methods.

Effects of Timber Management on Soil and Water

Timber harvest and slash disposal will impact soils by displacement, compaction, or reduction in fertility, depending on method used. On gently sloping ground (normally less than 35 percent slope) where tractors are used, roads, skid trails and landings may occupy 20 percent of the land area. These facilities are necessary for the harvesting operations, and it is intended that the impacted area will be kept to this amount or less, regardless of alternative.

During the first and second decades, harvesting will continue to occur on a higher percentage of gentle ground than in later decades. This is true with any of the alternatives. On steep ground (over 35 percent slope) where timber is yarded by cable or helicopter, compaction is much less a problem but erosion from rain or snowmelt can be serious.

Although standards and guidelines will be followed, some soil loss will occur and will affect streams when timber is harvested. This sedimentation will be detrimental to water quality and fish habitat. Through proper mitigation measures, including careful timber sale layout, proper operational planning and contract administration, these effects can be held to acceptable levels whereby actual damage and effects are not measurably different than normal background sedimentation levels on a Forest-wide basis. In individual drainages larger increases will sometimes occur as a result of unusual climatic events, a concentration of activities within a short period of time, or where mitigative measures were inadequate. Figure IV-4 provides an approximation of sediment that can be expected. For derivation of sediment production estimates, see Appendix F.

Effects of Timber Management on Stream Flows

Timber harvest has been known in some instances to result in significant temporary streamflow increases where clearcutting or other methods have been applied in headwaters of experimental watersheds (Troendle 1983). These changes in streamflow occur for a variety of reasons, including: a reduction in the use of water by living vegetation; an increase in the amount of rain or snow reaching the ground (less is caught by and evaporated from the leaves and boles of trees); and changes in wind patterns following timber harvest which cause more snow to be deposited in created openings than in adjacent timbered areas. In determining whether any significant annual streamflow changes could be expected from implementing the Forest management alternatives, a comparison (USDA Forest Service 1980) was made between the current streamflow and the maximum potential streamflow regime (clearcutting or shelterwood cutting) of all forested acres within a 10-year period. The estimated annual flow increase from this analysis was less than 10 percent.

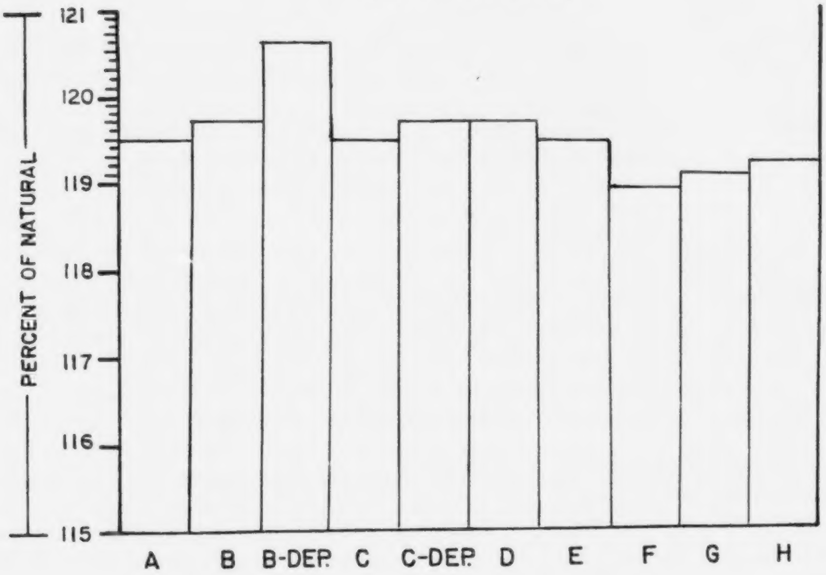
The relationship is consistent with results from the Umatilla Barometer Watershed, geographically the closest ongoing study (Felix 1984). With a total potential increase this small it is unlikely that any significant change would result from any of the alternatives or that the differences among alternatives would be significant. Consequently, no changes in streamflow among alternatives are shown. Mean annual streamflow from the Forest is estimated to be 2.73 million acre-feet.

Regardless of the foregoing, there is concern about the cumulative effects on soil and water where a series of timber sales are planned in a single drainage. This is particularly important where fish streams are involved and private lands are intermingled with National Forest lands. Without coordination between the various landowners and the Forest Service, large areas of timberland could be harvested simultaneously. The cumulative effects of uncoordinated harvesting could be serious.

On the Wallowa-Whitman there are few intermingled private lands. Where they do occur, they occupy a relatively small portion of any particular drainage. Therefore, the potential for serious cumulative effects is largely from scheduling of projects for which the Forest Service has control. Standards and guidelines have been developed which require analysis and mitigation of proposed activities having the potential to adversely affect sediment levels or streamflows (see Standards and Guidelines in Chapter 4 of the Proposed Forest Plan accompanying this DEIS). If such analysis indicates serious alterations in streamflows, the projects will be altered or rescheduled accordingly. The normal requirements for dispersion of created openings as part of Management Strategies 1, 2, 3, and 18 also tend to mitigate the effects of harvesting timber on soil and water resources.

Figure IV - 4

AVERAGE SEDIMENT PRODUCTION BY ALTERNATIVE
(For 5 Decades)



Effects of Timber Management on Forage Production

As timber is harvested, understory plants are released to grow and potential forage is increased. As the new timber stands grow and reoccupy the land, this "transition" forage gradually decreases. Because of tree thinning and relatively early re-entry for timber harvest, the potential forage production never falls back to unmanaged levels. This cycle causes more total forage to be available under a continuing timber management program than without management (assuming absence of periodic wildfire). Therefore, somewhat more forage is produced as more acres are managed for timber. Alternative B would be expected to produce more forage than Alternative F or G.

On the Wallowa-Whitman, the potential future forage production differences between alternatives are not as great as on some National Forests because over 50 percent of the land suitable for grazing is nontimbered and many of the gains due to transition forage resulting from timber harvest are already a part of the current situation. Therefore, analysis indicates a range of less than 4 percent between Alternatives B and F over the Forest as a whole at the end of the first decade. However, the range is 13 percent when calculated only on the forested area.

Through the construction of roads and skid trails associated with timber harvesting, livestock distribution is improved over the range. But, while forage production and livestock distribution are improved, timber management will at times disrupt livestock grazing. This is due to the need for grazing deferment for one to three years to allow for reestablishment of new timber stands.

Effects of Timber Management on Recreation

Timber management activities have more effect, both positive and negative, than any other activity because they are responsible for the greater changes in forest character. As shown in Tables IV-3 and IV-3a, the Recreation Opportunity Spectrum will be changed in each alternative primarily because of road development for timber management. Opening areas to motor vehicle access increases recreation opportunity because more recreational activities are associated with accessible land than with less accessible land.

The experience associated with elk and deer hunting, popular activities on the Forest, are different in areas where timber management occurs. Because of increased access, animals may be harvested more rapidly than in undeveloped areas. Road closures can help but will not totally offset the effects of development. Few will argue that the big-game hunting experience is different in areas where timber is harvested and managed than where it is not. Whether the difference is desirable or undesirable varies with the individual hunter. See Effects of Alternatives on Wildlife within this chapter.

Effects of Timber Management on Landscape Appearance

The appearance of forested areas is changed when timber harvesting occurs, making the influence of human activities obvious to most people. Depending on the observer's preferences, a managed forest may or may not be attractive. Along major travelways special landscape management practices will provide a measure of "naturalness," regardless of alternative. This will include such measures as thorough logging slash cleanup, cutting low stumps, providing a variety of tree sizes, and shaping created openings to appear as though they had resulted from natural occurrences (see Effects of Alternatives on Visual Quality in this chapter).

Effects of Timber Management on Diversity of Plant and Animal Species

Timber management has more influence on Forest diversity than any other activity of man. The effects can increase or decrease diversity. The level of diversity is expected to increase through early decades in all alternatives as mature stands are converted to shrub seedling, pole-sapling, and the young timber stands. Diversity is expected to peak between the third and fifth decades with mature and old-growth timber stands still represented, but will decline from there as mature timber stands continue to be harvested. Tree species diversity will remain high in all alternatives. True firs and spruce will be best represented in Alternatives E, F and G; Douglas-fir, ponderosa pine, and lodgepole pine will be best represented in Alternatives B, B-departure, and D. Regeneration harvest (clearcutting, seed tree, or shelterwood) will result in increasing numbers of shade-intolerant species, particularly lodgepole pine and western larch. White fir, spruce, and subalpine fir will remain strong components of riparian areas, wilderness and Management Area 6 in all alternatives.

There will be less diversity in Management Area 1 than in Management Areas 2, 3, or 18. Created openings will frequently abut stands where the trees are little more than 4 1/2 feet tall, providing minimal edge contrast.

Management Areas 2, 3, and 18 require 10-foot tall trees prior to the harvest of adjacent units and permitting a substantially better edge contrast which will benefit wildlife, recreation, and aesthetics. Created openings will often abut stands of trees that are 10 feet tall and others with trees that are 30-35 feet tall. The cover dispersion requirements of Management Area 3 will further enhance edge contrast by providing interspersion of stands 60-100 feet in height.

Increased diversity is regarded as aesthetically pleasing (USDA Forest Service 1980). Increased diversity, particularly as represented as edge contrast, allows for more effective shaping and blending of harvest units. The low edge contrast in Management Area 1 makes it more difficult to keep apparent openings in scale with natural features of the landscape than is possible in Management Areas 2 and 3.

Increased diversity of edge and successional stages in plant communities provides habitat for greater numbers of wildlife species and are thought to provide a higher degree of ecological community stability. The diversity of cover may also affect recreational opportunity by changing distribution of hunters, composition of animals harvested, and the length of time it takes to harvest the available animals. For a more thorough discussion of the benefits of edge, interspersion of types, successional stage diversity, and their relationship to Forest management, the reader is encouraged to read "Wildlife Habitats in Managed Forests" (Thomas and others 1979).

The discussion of diversity thus far has emphasized the portion of the Forest managed for timber production. All alternatives include nearly 250,000 acres of forest in wilderness or other lands within Hells Canyon National Recreation Area which are, and will remain, mature or old-growth trees except as altered by fires or natural events. Several alternatives include additional acreages of lands not scheduled for timber harvest but which also contribute to mature and old-growth successional stages. Some, but not all, mature (or "over mature") stands in these areas meet old-growth definitions. Many high elevation stands do not provide the necessary large diameter trees or snags and are not adequately distributed across the Forest to provide for wildlife needs.

All alternatives also contain approximately 90,000 acres of widely scattered lands identified as unsuited for timber production. Since these lands will not be entered for timber production purposes, they too will contribute to the mature and old-growth components of the ecosystem.

Effects of Timber Management on Wildlife

Effects on wildlife species indigenous to the forested area will vary according to habitat needs. These needs have been identified in terms of the species' association with one or more of the six recognized Forest successional stages. These stages range from the grass-forb and the shrub-seedling stages, which are present immediately after total timber removal, through harvesting or fire, to the old-growth stage.

The biological carrying capacity for wildlife species associated with the old-growth stage for feeding and reproduction will be reduced in direct proportion to the reduction in the mature and old-growth successional stages. These species include the pileated woodpecker and the pine marten which have been identified as indicator species for this habitat type for northeast Oregon forests. These species are not exclusively old-growth dependent, but where short timber rotations occur, their alternate mature forest habitat associations will be virtually eliminated. Riparian and visual foreground areas provide some elements of the habitat needs of these species, but are limited in dimension. That is, riparian areas are rather narrow and linear. Visual foreground areas may be managed for a much more open stand condition than is desirable for these species. The visual foreground areas are also normally associated with roads, where human disturbance may adversely impact the species.

Species of specific concern are the 38 birds and 24 mammals that utilize tree cavities for nesting, shelter, and roosting. The majority of bird species are insectivorous. The most important are the woodpeckers, since many other animals are dependent upon cavities created by them. These species need a variety of dead or defective trees for both nesting and feeding.

Stands managed to emphasize timber production are made up of thrifty, relatively young trees. Therefore, the number of dead and defective trees, standing or down, are much fewer than in an unmanaged situation. This will be the case in Management Areas 1, 2, 3, and 18. Although natural mortality in managed stands is likely to result in small snags (less than 18 inches in diameter) of approximately 60 per hundred acres, there will be no large snags once those now standing have fallen. In these areas populations of species that require large snags for nesting, as represented by the pileated woodpecker, will also be smaller. This is not to imply that there will be vast areas devoid of large snags. Interspersed throughout Management Areas 1, 2, 3, and 18, will be riparian habitat, approximately 90,000 acres of forest lands unsuitable for timber production, visually sensitive landscapes, and old-growth stands, each of which will provide large snags. In addition, the minimum management requirements require that, in association with each mature or old-growth stand, there be an additional 300 acres where snag levels of all sizes exceed the 40 percent level as defined in "Wildlife Habitats in Managed Forests" (Thomas and others 1979). Regardless, in all alternatives except Alternative F,1/ where strategies 1, 2, 3, or 18 are applied, there will eventually be scattered timbered areas as large as 400 acres where there will be no large snags. This may be considered an exception to the current snag distribution requirement for the Pacific Northwest Region (Region 6) which suggests that the 40 percent level be maintained on the average over each subdrainage or Total Resource Information System (TRI) compartment (approximately 7,000 acres).2/

The four wildernesses and the Hells Canyon National Recreation Area will provide high levels of large and small snags regardless of the Forest Plan alternative selected.

Table IV-12 shows an approximation of large snag habitat that will be present in the long term, expressed as a percent of optimum, with each alternative compared to the present. Reduction in large snags will be greater than these figures suggest. Many large snags are surplus to the level needed (approximately 75 per 100 acres) to allow woodpeckers to fully occupy all potential home ranges or territories of the Forest. Loss of these surplus snags is not accounted for in calculating the percent of optimum as defined in "Wildlife, Habitats in Managed Forests" (Thomas and others, 1979).

Table IV-12
FUTURE LARGE SNAG LEVELS
(Percent of Optimum)

PRESENT	A	B	B-dep	C	C-dep	D	E	F	G	H
55	27	25	24	27	28	27	31	40	28	30

The use of wood for home heating will also have an important influence on dead tree habitat. At present, lack of vehicular access protects many snags but as wood becomes more valuable, users become more adept in their methods of retrieving wood from areas that are difficult to reach. It is likely that in order to maintain old-growth conditions, it will be necessary to

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1/ Alternative F provides large snags within all management areas.
2/ Forest Service manual 2360. R6-Supplement 33, March, 1985.

prohibit wood cutting in old-growth (Management Area 15) and the 300-acre snag retention areas that are provided near the old-growth stands. This is likely to create an enforcement challenge for Forest administrators.

Biological carrying capacity for those species which depend on the shrub-seedling, pole-sapling or other young timber stages will be increased. Some representative species of these stages are the Cooper's hawk, sharp-shinned hawk, and snowshoe hare. Ruffed grouse will sustain some reduction in nesting spots due to the cleaner forest floor that is managed for timber production. Important hardwood habitat along streams will not be significantly disturbed. A comprehensive wildlife list, including the Forest successional stage needs of each species, is available in "Wildlife Habitats in Managed Forests."

Timber management affects the amount and quality of big-game cover. Hiding cover for deer and elk is often eliminated as stands are harvested. However, as the stands are reestablished, they soon provide new hiding cover, often of better quality than in the original unmanaged stands. Over the Forest as a whole, hiding cover will tend to increase over time due to more areas being in younger tree age classes. Thermal cover is generally reduced although such reductions may allow for desirable mixes of hiding cover and forage.

Interspersion of the various successional stages and the cover/forage relationships they represent is important to many wildlife species, particularly deer, elk and blue grouse. This interspersion is related to, but much more specific than, the successional stage relationships which were described in the discussion of diversity. The following describes the implications of harvest schedules associated with Management Areas 1, 2, 3, and 18.

Within Management Area 1, most mature stands on gently sloping ground will be scheduled for harvest in their entirety within thirty years. Mature stands presently represent nearly 55 percent of all gently sloping forest lands and often occur in major continuous patches. An additional 10 percent of the gentle forest lands are characterized by overwood removal opportunities which are also scheduled within the first two decades. Therefore, large areas of relatively flat ground will be converted to openings or young tree stands unless interrupted by riparian zones, visual foreground areas, timber lands unsuited for timber production, or old-growth management areas. The intermingling of steep lands, economically unsuitable in some alternatives, will occasionally increase the interspersion of forest cover and openings.

Another factor that will tend to reduce the effects of Management Area 1 are the numerous openings present throughout much of the Forest. Management Area 1 requires that created openings not exceed 40 acres and that an opening remain until reproduction reaches at least 4 1/2 feet in height. Logical logging units must remain between each created opening. However, the strategy also requires that created openings adjacent to natural openings of 30 or more acres not exceed one-third the size of the natural opening and not occupy more than one-third of the perimeter of the natural opening. The Chesnimnus Plateau is a case in point. Although much of the area has been allocated to Management Area 1 in several alternatives, the complexity of the existing vegetation pattern will tend to spread harvest over a greater period of time than would be the case if the area were uniformly timbered.

These minimum harvest dispersion standards will serve to maintain a distribution of thermal cover (though at less than optimal size and spacing) for another two decades. This will preserve the option of increasing the emphasis on thermal cover in future plans. However, the cost in sustained harvest of choosing increased emphasis on thermal cover will increase as time goes on.

Within Management Area 2, most mature stands on gently sloping ground will be scheduled for regeneration harvest over a period of six decades. This provides a good distribution of big-game cover and forage areas interspersed in 40-acre or smaller patches.

Within Management Areas 3 and 18, most mature stands will be scheduled for regeneration harvest over a period of eight decades. This allows for maintenance of near-optimum interspersion of cover and forage areas.

Effects of Timber Management on Fish

Timber harvesting may increase and extend peak spring streamflows, reduce stream shading (increasing stream temperatures) and alter pool riffle relationships through the introduction or removal of debris from stream channels. Sediment from construction of roads or skid trails may fill spawning gravels. The application of Standards and Guidelines will largely mitigate these impacts. Such practices will include avoiding water courses with skid trails and roads, retaining shade along streams, felling timber away from streamcourses and other measures described in the Forest Service Manual and Handbooks (also, see Standards and Guidelines in the Forest Plan which accompanies this document).

Wildlife and Fish

Effects of Alternatives on Wildlife

Each of the alternatives, with the exception of Alternative A, is designed to meet or exceed the minimum management requirements (MMR's) for wildlife in the long as well as the short run on the National Forest. National Forests occupy the majority of forested land in northeast Oregon and each National Forest Land and Resource Management Plan will provide for MMR's on a coordinated basis. Therefore, to the extent that National Forest management has influence, viable populations of fish and wildlife species will be retained regardless of the cumulative effects of management on National Forests and adjacent lands of other ownership. Migratory species may be affected by management on their off-Forest wintering areas. Such effects are beyond the scope of this analysis.

On the Wallowa-Whitman, wildlife habitat is affected more by other resource management activities, particularly timber management, than by direct efforts to alter habitat. As shown in the Summary of the Analysis of the Management Situation, direct efforts to improve habitat at the assigned RPA target levels would be inefficient, overshadowed by the effects of timber management. Realistic levels are recommended for all alternatives (see Table II-3a in Chapter II).

Populations of pileated woodpeckers may be expected to decline in all alternatives, except Alternative F, as large snags are lost through intensive management as illustrated in Table IV-13. If 60 percent occupancy of old-growth habitat, at a density of one pair per 300 acres is assumed (see Appendix G), then Table IV-13 shows the number of pairs of pileated woodpeckers which could be supported under each alternative compared to those supported at present.

Table IV-13
PAIRS OF PILEATED WOODPECKERS BY ALTERNATIVE
(Long-Term)

PRESENT	A	B	B-dep	C	C-dep	D	E	F	G	H
346	299	287	266	323	315	317	334	349	301	324

Populations of other mature and old-growth indicator species, such as the pine marten, white-headed woodpecker and three-toed woodpecker, may be expected to follow the trends of the pileated woodpecker. Maintenance of continuity of cover for the pine marten is enhanced with increased acreage of Management Area 6 in Alternatives C, C-dep, D, E, F, and H. The distribution of old-growth management areas will ensure viable populations of all associated wildlife species. Lodgepole pine old-growth for three-toed woodpeckers is assumed to be adequately represented in economically unsuited lands in all alternatives.

No adverse effect is anticipated in any alternative on any threatened or endangered plant species. Monitoring of these species will continue.

Adequate habitat for Cooper's and sharp-shinned hawks will remain in all alternatives due to stands with trees too large to precommercially thin and too small to commercially thin for several decades (excessively stocked pole stands). These species need to be monitored to determine whether managed stands will represent acceptable habitat. If it proves necessary to provide unmanaged thicket conditions in the future, selected stands may be provided without reducing timber output levels in all alternatives except B-departure.

Habitat will be improved for the yellow warbler as livestock grazing becomes better controlled and riparian habitat improves.

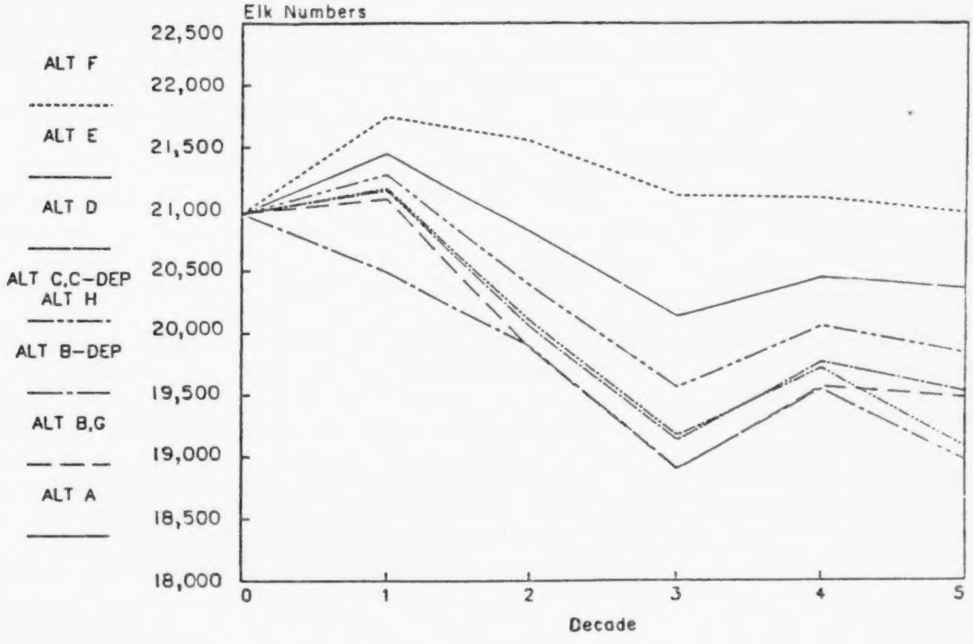
The value and interspersion of cover for elk (as an indicator species, elk also represents mule deer) is rated by a Forest-wide habitat effectiveness index and converted to elk numbers as shown in Figure IV-5. The Oregon Department of Fish and Wildlife Management Objective level for elk is 21,000 animals on the Wallowa-Whitman during spring, summer, and fall seasons. Because there are a variety of factors that affect big-game numbers besides the habitat condition of the National Forest (female deer and elk permits issued, conditions of off-Forest winter ranges, winter feeding programs, predator control programs, etc.), the elk numbers shown should also be considered an index value. However, there are some assumptions about the habitat effectiveness that can be made with reasonable certainty. Differing degrees of habitat effectiveness are expected to affect:

1. The use of private land by elk.
2. The distribution of elk, particularly during times when they are being hunted.
3. The length of the hunting season (before harvestable animals are removed from the herds) assuming present hunting regulations. This could cause the State wildlife agencies to adjust season lengths or hunter numbers to compensate for increased or decreased rates of harvest.
4. The physiological stress experienced by elk as they seek to balance the energy expenditures for body temperature maintenance, reproduction, foraging and escape with the energy available in the forage they consume.

Figure IV-5

ELK HABITAT EFFECTIVENESS

INDEXED BY POTENTIAL ELK NUMBERS



Effects of Alternatives on Fish Production

Measurable alterations in streamflow are not predicted. All alternatives assume Best Management Practices including special consideration for riparian areas. These measures minimize sediment, maintain adequate shade to protect stream temperatures, and maintain or improve existing stream channel stability. (See Effects of Timber Management on Streamflows.)

The Smolt Habitat Capability Index (a measure of the potential of a stream to produce smolt) is expected to increase with accomplishment of proposed habitat improvement (see Chapter III, Fish) and improvement in grazing management. Escapement past downstream hydroelectric dams below the Grande Ronde and Imnaha River drainages is presently inadequate to utilize this available smolt habitat. RPA targets can be achieved or exceeded in the long-run in all alternatives except A and G, assuming the escapement problems can be overcome.

In summary, fish production will continue to depend on downstream escapement, fish stocking programs and the success of stream habitat improvement.

Effects of Wildlife on Timber

Several wildlife species contribute to reforestation problems throughout the Forest. Most notable are the severing of roots by pocket gophers during the early years of plantation establishment and trampling and nipping damage to seedlings by elk. Prevention of damage, or replanting, contributes significantly to the cost of tree establishment. Losses from wildlife will be proportionate to the amount of acres planted, a number which varies by alternative. Figure IV-3a shows how many acres are planted by alternative.

The implementation of harvest dispersion constraints in Management Area 2, would result in a reduction of timber yield of 10-12 percent from what the same lands could produce under Management Area 1 direction. The implementation of Management Area 3 or 18 harvest dispersion constraints results in a reduction in timber yield of about 20 percent from Management Area 1. Table IV-14 displays timber production foregone as a result of Management Areas 2, 3, and 18.

Table IV-14
TIMBER PRODUCTION FOREGONE AS A RESULT OF MANAGEMENT AREAS 2, 3, AND 18
(MMCF Per Year)

A	B	B-dep	C	C-dep	D	E	F	G	H
3.2	0.7	0.7	2.3	2.3	1.3	0.7	5.5	0.7	2.1

Effects of Wildlife on Livestock Grazing

As discussed under Livestock Grazing, elk and deer compete with livestock for similar forage. Wildlife have the advantage of being able to use the range earlier in the year than livestock, as well as during the time that livestock are using it. Early use, when the ground is moist, can damage soil and deplete early spring forage. However, since elk move around more on the range than livestock, soil damage is less significant than if livestock were permitted to use the range early (Lyon 1985).

Elk and deer damage fences and use salt placed for livestock. Predators cause livestock losses, particularly on sheep grazing allotments.

The Effects of Wildlife on Soil and Water

As with any large animals, elk and deer contribute to soil compaction and streambank damage through trampling. Because they are on the ranges in early spring when soil is moist and soft, this damage can be significant. As with domestic livestock, defecation in water by wildlife of all species contributes to bacteria in streams, lakes, and ponds.

Effects of Wildlife on Private Lands

The impacts of deer and elk on private lands adjacent to the National Forest are among the more difficult to estimate. These impacts include private forage consumed or damaged, fences damaged, irrigation ditches damaged and soil damaged. Regardless of management alternative, the impacts will vary with many factors, including the degree of livestock use on the adjacent National Forests, weather conditions, current and past timber management activities, and conditions or attractions on the private lands. Some generalizations can be made:

- When private lands lie on the natural winter game ranges, these lands will be used by game, particularly during severe winters, regardless of conditions or practices on the adjoining public lands.

- As elk and deer fluctuate in numbers, there will be a corresponding fluctuation in use of private lands as well as public lands, regardless of other factors or mitigation measures.

- Providing high quality habitat for big game on public ranges can reduce impacts on private lands.

- Winter game feeding programs can reduce game impacts on private lands.

Old-Growth Forest

Effects of Alternatives on Old-Growth Forest

The old-growth forest allocation (Management Area 15) varies by alternative as described in Chapter II. The areas vary in size from 40 to 300 acres and are scattered over the Forest to maintain associated recreational experiences, wildlife habitat, genetic diversity, and old-growth ecosystems. The areas will not be scheduled for timber harvesting, but harvest may occur in the event of a catastrophe or when the timber stands deteriorate and no longer serve the intended purposes. If an old-growth stand is lost, a replacement stand will be selected.

With the exception of Alternative F, there will be less opportunity to experience old-growth forest environments in the future over the Forest as a whole. By reviewing the land allocation maps for each alternative, the reader can visualize the dispersion of old-growth for each alternative.

There are presently 173,000 acres of old-growth on the Forest. In the long term the amount will range from 175,000 acres in Alternative F to 133,000 in Alternative B as illustrated in Table IV-15. The acreage remains fairly high because of the amount of old-growth in the Hells Canyon National Recreation Area and the four wilderness areas. Distribution of old-growth stands is poorest in alternatives having the least acreage of old-growth.

With the exception of Alternative E, it is best in alternatives with the greatest acreage of old-growth. Except for extensive roadless areas where old-growth is maintained, Alternative E shares the distribution pattern of Alternative B.

Old-growth timber stands contribute disproportionately to the diversity of wildlife. Mature and old-growth forest successional stages support the greatest number of wildlife species. Many of these species are habitat specialists and less tolerant of habitat alteration than the habitat generalist species best represented in early successional stages (Thomas and others 1979). Old-growth stands are characterized by large, down woody debris which contribute to nutrient cycling and stream stability, (Franklin 1981) and provide uniquely stable, cool, moist habitats for animals and substrate for microbial activity (Maser; Trappe 1984). These features of habitat are not unique to old-growth but are most abundant there. The loss arising from old-growth habitats may cause disproportionately greater loss to wildlife than acre figures suggest.

Table IV-15
ACRES OF OLD-GROWTH TREE STANDS BY ALTERNATIVE
(Thousands of Acres)

A	B	B-dep	C	C-dep	D	E	F	G	H
149	143	133	161	158	158	167	175	151	162

Effects of Old-Growth Forest on Other Resources

The adverse consequences of old-growth forest management are the potential timber production that is foregone, and to a lesser degree, the loss of potential forage production. Annual timber production foregone, by alternative, as a result of old-growth objectives is displayed in Table IV-16 and includes the amount resulting from meeting minimum management requirements (see Appendix B.) The old-growth forest stands provide a source of insects and disease that can affect adjoining management areas. They also provide excellent habitat for insectivorous birds which may help keep insect populations at endemic levels. The loss of timber due to the indirect effects of insects and disease spreading from old-growth stands is not known and is not included in the figures shown in Table IV-16.

Table IV-16
TIMBER PRODUCTION FOREGONE AS A RESULT OF ACHIEVING OLD-GROWTH OBJECTIVES
(MMCF Per Year)

A	B	B-dep	C	C-dep	D	E	F	G	H
1.53	1.03	1.03	2.43	2.43	2.43	1.03	2.51	1.03	2.43

Protection

Effects of Alternatives on Fire and Fuels

Although the differences in alternatives will influence fire and fuels, there are many factors that are similar regardless of the alternative considered. In general, a higher level of timber management activity will require greater emphasis on fire prevention and detection programs because of the higher levels of investment in the land. Managed stands also provide more fuels exposed to the drying effects of sunlight. Recreation use is also expected to gradually increase in all alternatives, necessitating increased fire prevention and detection programs. All alternatives will permit similar levels of fuelwood gathering for the next decade. (This is mentioned because fuelwood gathering is a source of human-caused fires). Lightning storms will continue to cause fires. These factors tend to obscure differences among alternatives from a fire prediction and management standpoint.

Effects of the Use of Prescribed Fire on Other Resources

In recent years Forest managers have become increasingly skilled in the use of fire and consider it a valuable tool for achieving objectives that would often be prohibitively expensive or less environmentally sound if achieved by other means. If fire is to be used effectively, it must be used when conditions are suitable for proper combustion, smoke dispersal, and when other conditions are satisfactory to meet objectives. Therefore, a degree of risk must be assumed. There will be instances when fires will burn more intensely than anticipated, producing what are usually considered to be undesirable effects. These can include increased soil erosion, reduced site productivity and increases in undesirable vegetation. This will often be true for the spots where slash is piled and burned but may also occur when heavy concentrations of fuels occur in broadcast burn areas. Impacts on air quality may occur as a result of burning (see Effects of Alternatives on Air Quality, this chapter).

There will continue to be emphasis on the use of prescribed fire, both from planned and unplanned ignitions. Such resource needs as range improvement, wildlife habitat diversity, fuel reduction, and the maintenance of wilderness ecosystems will result in a higher number of burned acres, with accompanying smoke, than there have been in recent years. Approximately

5,000 acres were burned in 1984. Fire is also important for preparing the ground for tree planting or natural seeding. Other beneficial effects can include reductions in undesirable plant species, increased availability of nutrients and reduction of undesirable microorganisms (Boyer and Dell 1980).

The differences in acres allocated to timber production in any alternative will cause the greatest variance in acres burned due to use of fire for fuel reduction. Harvest and silvicultural treatments on steep slopes will limit mechanical fuel treatments, in some instances making use of fire the only suitable alternative.

Prescribed burning may result in increases in noxious weeds, particularly Canadian thistle. Where this proves to be a serious problem, control of the weeds through the use of chemicals or other means may be necessary, adding to the costs of the burning prescriptions.

Effects of Alternatives on Pest Management

In general, the incidence of insects and disease which affect timber will be in inverse proportion to the acres of land intensively managed for timber production. For example, Alternative B, with a high percentage of Management Area 1, will have a high proportion of young, healthy timber which is more resistant to insect attack and not as susceptible to disease as are older, more slowly growing trees. Alternative F, with more acres of old-growth timber, Management Area 6, and other management areas with objectives which preclude intensive timber management practices, will have a greater amount of infection.

Unlike insect and disease trends, animal damage problems are likely to increase in direct proportion to the number of acres intensively managed for timber production. The potential for damage to young trees by rodents, as well as by grazing or browsing animals, will increase as the acres of newly planted stands increase. Tables IV-3 and IV-3a show the amount of planting by alternative and therefore also illustrate the relative amounts of animal control that will be necessary.

Research Natural Areas

Effects of Alternatives on Research Natural Areas

To not establish any one of the research natural areas would mean that the ecologic cells identified would not be represented in the Research Natural Area System unless they could be found elsewhere. It is unlikely that unaltered examples of some of the ecosystems could be found. In such instances natural ecosystems would not be available to serve as baselines for comparison, nor would they be available for other scientific research.

Effects of Research Natural Areas on Other Resources

Certain resource uses are usually foregone when research natural areas are established. Because most of the proposed areas on the Wallowa-Whitman lie within wilderness or are nontimbered, the potential values lost are relatively low, regardless of how many areas are selected. Of those proposed, only Government Draw is significantly timbered, containing approximately 1.5 MMBF of standing volume.

The grazing potential of the areas totals approximately 1,000 AUM's annually. In some cases the areas are not currently grazed. In others, grazing could probably continue but at a reduced rate if the natural areas are established. The most significant grazing conflict is in the Pleasant Valley proposed area. Besides the decrease in grazing capacity, the location would create inconvenience in moving sheep throughout the remainder of the grazing allotment.

Recreation use would not be significantly altered by establishment of any of the proposed research natural areas.

Transportation System

Effects of Alternatives on the Transportation System

Of the various transportation features such as roads, trails, airports and navigable streams, the road system has the most effect on other resources and provides, by far, the most extensive means of access to, from and within the National Forest. Table IV-17 provides information on the number of miles of road that will be in place in the long run for the Forest as a whole. Since there are currently over 9,300 miles of roads, nearly 90% of the road system is in place, regardless of alternative.

Table IV-17
MILES OF ROAD AT YEAR 2020 BY ALTERNATIVE AND USER CLASS

User Class	A	B	B-dep	C	C-dep	D	E	F	G	H
Maintained for Passenger Cars	865	867	867	865	865	865	845	859	866	865
Maintained for High Clearance Vehicles	3,280	3,195	3,195	3,195	3,195	3,195	3,180	2,530	3,195	3,195
User Maintained for High Clearance Vehicles	2,786	3,170	3,259	2,756	2,995	2,975	2,958	2,228	2,829	2,731
Roads Closed Year Round	4,161	4,310	4,377	4,175	4,244	4,204	4,196	4,919	4,140	4,113
Totals	11,092	11,542	11,698	10,981	11,299	11,239	11,179	10,536	11,030	10,904

It may seem that the number of miles of road should vary more by alterna-tive. The reasons for the relatively small variation are: (1) nearly 90 percent of the ultimate road system is already in place and (2) it often takes nearly the same number of miles of road to harvest a small amount of timber from an area as it does to remove a large amount. The primary differences are due to roading or not roading the remaining roadless areas, or in meeting the target road densities which vary by management area. While the total miles of road do not vary greatly between alternatives, those alternatives which provide higher timber harvest levels will achieve full road development sooner than will the alternatives which have lower timber output levels.

The construction of roads in areas that are presently unroaded will often displace trails, and in some instances result in elimination of trails. The number of miles affected will vary from about 20 in Alternative F to about 140 in Alternative B. Not all trails in roaded areas will be eliminated. Trails that serve a useful purpose (provide a significant recreational experience or provide needed access) will be retained, either on present or relocated routes.

Effects of Transportation System on Forest Resources

Road construction, maintenance, existence, and use have a variety of effects on nearly all resources. Roads provide access to the Forest for numerous recreational pursuits. The roads offer recreational driving enjoyment for cyclists and other recreational vehicle users. They provide management access and access for the harvest of Forest products and for the transportation of livestock. The excavation for roads provides ready-made mineral exploration sites. Survey and construction of roads sometimes result in the discovery of archaeological or historical sites that would not otherwise be found. Roads also take the land on which they lie out of timber and forage production. Roads currently occupy 14,000 acres on the Forest; this amount will increase by approximately 10 percent by the year 2020. The use of roads by vehicles results in dust, noise, and the death of animals. Water running from roads often carries silt into streamcourses, especially at stream crossings or where roads parallel streams for long distances. Secondary effects are damage to fish spawning gravels. Use and maintenance of roads tends to promote the spread of noxious plants onto and within the Forest, and from the Forest.

The use of roads makes the land less suitable for elk (Thomas and others 1979) but makes the harvest of game more easily accomplished. The construction of roads and trails sometimes creates scars which alter the character of the landscape but also provides access for scenic viewing. Roads provide ready access for control of wildfire but also increase the risk of fire by increasing access for people. The construction and maintenance of roads cause expenditures of energy and money.

The construction of most roads is tied directly to the sale of timber and usually constitutes a major cost associated with timber harvest. Although road costs are usually highest when initially constructed, they are not a one-time cost. Roads must often be reconstructed or resurfaced for subsequent timber sales, usually within 20 to 25 years. Table IV-18 shows estimated miles of road construction and reconstruction, and the approximate

Table IV-18

AVERAGE MILES AND COSTS OF PERMANENT ROADS CONSTRUCTED AND RECONSTRUCTED PER YEAR BY DECADE* (COSTS IN THOUSANDS OF 1982 DOLLARS)

ALTERNATIVE		DECADE 1		DECADE 2		DECADE 3	
		MILES	COST	MILES	COST	MILES	COST
A	Construction	115	2,810	52	2,212	30	1,000
	Reconstruction	85	1,264	94	1,648	111	1,710
	Total	200	4,074	146	3,860	141	2,710
B	Construction	133	2,611	65	1,815	34	1,001
	Reconstruction	91	1,800	98	1,825	80	1,891
	Total	224	4,411	163	3,640	154	2,892
B-DEP	Construction	145	4,082	69	2,610	45	3,692
	Reconstruction	122	2,179	137	2,342	166	2,490
	Total	267	6,261	206	4,952	211	6,182
C	Construction	117	2,878	52	1,895	29	1,206
	Reconstruction	88	1,734	80	1,475	108	1,740
	Total	205	4,612	132	3,370	137	2,946
C-DEP	Construction	140	4,158	52	1,374	27	1,237
	Reconstruction	113	2,099	105	1,521	107	1,612
	Total	253	6,257	157	2,894	134	2,849
D	Construction	124	2,744	58	2,284	31	1,010
	Reconstruction	92	1,781	93	1,584	121	1,852
	Total	216	4,525	151	3,868	152	2,862
E	Construction	118	2,280	52	1,837	37	627
	Reconstruction	111	1,889	118	1,800	146	2,048
	Total	229	4,169	170	3,637	183	2,675
F	Construction	85	2,167	36	2,290	22	885
	Reconstruction	66	1,375	66	1,194	76	1,286
	Total	151	3,542	102	3,484	98	2,171
G	Construction	109	2,036	56	2,108	27	752
	Reconstruction	66	1,429	81	1,418	87	1,466
	Total	175	3,465	137	3,526	114	2,218
H	Construction	107	2,235	48	2,195	25	874
	Reconstruction	67	1,462	71	1,307	91	1,509
	Total	174	3,697	119	3,502	116	2,383

* Estimates of Purchaser Credits for road work done in association with timber sales; road work specified in the HCNRA Comprehensive Management Plan for the HCNRA; road work to access roadless areas; and 95% of Capital Improvements not included in the above categories.

annual costs by alternative and time period. Costs include engineering services, purchaser road credits, and other construction costs. In the first decade new construction dominates road building activity but by the second and third decades most costs are from reconstruction.

Road construction may be necessary for a variety of reasons, including correcting safety or environmental problems, or to upgrade a road due to previously unforeseen need.

The effects and costs of road reconstruction are usually much less than those of initial construction since reconstruction normally takes place in a cleared right-of-way where much of the excavation and shaping of the road prism have already occurred. Reconstruction can mean no more than resurfacing, minor curve widening, drainage improvement, or less. However, reconstruction may include measures to straighten or widen a road, or change the grade. In these instances the effects are similar to those of initial construction.

Energy

Table IV-19 shows the estimated net energy consumption resulting from implementing each alternative (Schwarzbart and Schmitz 1982). This is a measure of energy efficiency. The values indicate that the energy spent to implement each alternative is more than the energy gained. Most activities consume more energy than they produce. Notable exceptions are fuelwood gathering and livestock grazing. Timber harvesting, recreation, road construction and fire prevention or suppression result in energy losses.

State and County Planning

Effects of Alternatives on State and County Planning

In Oregon, city and county comprehensive management plans are designed to carry out State-wide planning goals.* A purpose of the plans is also to incorporate the plans and programs of the various governmental units into a single management tool for the planning area. The State governmental body responsible for reviewing county comprehensive plans is the Oregon Land Conservation and Development Commission.

County plans recognize the National Forest as "primary forest", "timber/grazing" or similar designation. Although counties do not have responsibility for regulating use on Federal lands, the Forest Service and county governments attempt to coordinate planning efforts to avoid conflicts. The alternatives discussed in this EIS are generally compatible with local governmental plans.

Following are the State-wide planning goals to which county plans must adhere, and a statement of how the Forest Plan alternatives meet these goals (State of Oregon 1980):

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* Coordination with local planning within Idaho Counties was accomplished through development of the Comprehensive Management Plan for the Hells Canyon National Recreation Area which the Forest Plan will adopt.

Table IV-19
ANNUAL NET ENERGY BALANCE (YIELD MINUS CONSUMPTION) 1/
(Billions of British Thermal Units)

ALTERNATIVE	DECADE 1	2	3	4	5
A	-3,640	-3,992	-4,483	-4,242	-4,731
B	-4,480	-4,050	-4,667	-4,731	-4,896
B-dep	-5,112	-4,910	-5,349	-5,140	-5,474
C	-4,577	-3,999	-4,472	-4,485	-4,776
C-dep	-4,739	-3,687	-4,333	-4,301	-4,514
D	-4,663	-4,270	-4,605	-4,756	-5,061
E	-4,585	-4,119	-4,496	-4,597	-4,685
F	-3,938	-3,592	-3,801	-3,999	-4,420
G	-4,291	-3,995	-4,203	-4,271	-4,624
H	-4,248	-3,817	-4,189	-4,401	-4,673

1/ Schwarzbart and Schmitz, Methods for Evaluating Energy Effects of Forest Management Alternatives, Vol. 1, USDA Forest Service; 1982.

Goal No. 1: "To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process."

The public involvement process used to develop this environmental impact statement is consistent with the State of Oregon's emphasis on citizen participation in the planning process.

Goal No. 2: "To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions."

The State-wide goal for the planning process is consistent with the process established by the National Environmental Policy Act of 1969 (NEPA), and the National Forest Management Act of 1976, the guiding policies for the National Forest Land and Resource Management Planning program.

Goal No. 3: "To preserve and maintain agricultural lands."

Livestock grazing potential on National Forest lands varies by alternative. However, National Forest lands which, by State definition, qualify as agricultural land are maintained as such in all alternatives.

Goal No. 4: "To conserve forest lands for forest uses."

The land management areas of the proposal and the various alternatives for areas defined as "forest lands" and "forest uses" are consistent with this State-wide goal. However, guideline B.2. states that "Forest lands should be available for recreation and other uses that do not hinder growth." In many Forest Plan management prescriptions, consideration for use other than wood production has resulted in less than maximum wood growth. In this sense the preferred alternative does not comply with the forest lands goal.

Goal No. 5: "To conserve open space and protect natural and scenic resources."

This goal is incorporated by all alternatives. Protection of cultural resources is required by law and Forest Service policy. The protection of scenic resources will vary by alternative, but will provide various levels of protection. By their nature and purpose, National Forests provide open spaces.

Goal No. 6: "To maintain and improve the quality of air, water, and land resources in the State."

All alternatives are supportive of this State goal.

Goal No. 7: "To protect life and property from natural disasters and hazards."

No actions included in any of the alternatives are projected to contribute significantly to the potential for loss of life or property due to natural disaster.

Goal No. 8: "To satisfy the recreational needs of the citizens of the State and visitors."

Recreational needs are considered in all alternatives. Dispersed recreation use is emphasized on National Forest lands.

Goal No. 9: "To diversify and improve the economy of the State."

The alternatives are projected to contribute to the economy of the area and State at varying levels. Depending on the objectives of the alternative, the economy may or may not be improved.

Goal No. 10: "To provide for the housing needs of citizens of the State."

This goal refers primarily to the availability of suitable land for housing. The Forest Plan is not likely to affect housing land needs. The alternatives do provide for various levels of wood products flow for use in housing construction.

Goal No. 11: "To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development."

None of the alternatives are likely to have significant effect on this State-wide goal. The Forest provides land for utility corridors and other facilities that are in the public interest.

Goal No. 12: "To provide and encourage a safe, convenient and economic transportation system."

The Forest does and will continue to coordinate the needs of the Forest transportation system with those of the State and local governments.

Goal No. 13: "To conserve energy."

Several of the alternatives propose streams for inclusion in the National Scenic River System. Since these streams have hydroelectric potential, some of the alternatives would restrict future potential energy sources. There are no prohibitions placed on development of potential geothermal or mineral power sources except in areas withdrawn from entry for such purposes, such as Hells Canyon National Recreation Area and wilderness.

Goal No. 15: To provide for an orderly and efficient transition from rural to urban land use.

None of the alternatives are projected to affect the State-wide goal.

Goals 14, 16, 17, 18, 19: These goals pertain to resources which are not specifically addressed by plans for the inland Wallowa-Whitman National Forest.

SOCIAL EFFECTS OF THE ALTERNATIVES

Alternative A
(Current Management Direction, Baseline Conditions)

Effects would be similar for Baker, Union and Wallowa Counties. During the next decade, the period covered by this social analysis section, the nature of the three-county area's economy is expected to remain much as it is. (See "The Area Economy, Chapter VI, A Social Appraisal of Oregon's Northeast Counties" (Pekar 1981)). Forestry and wood products, agriculture, minerals, and government employment are assumed to remain the principal sectors of the area's economy.

Lifestyle and Job Dependence

If current management direction continues, the volume of timber offered for sale during the next decade, on a board foot basis, would be below that offered during the 1979-1983 period. This analysis projects a 14 percent decline in forestry and wood products-related employment and increases in employment related to recreation and tourism. The increases in recreation and tourism would not compensate for the losses incurred in the timber industry, however, either in numbers, level of income, or in payments to local government. There will be greatly increased activity in timber stand improvement work which will mitigate some of the reduced wood products-related employment, though at lower wage levels. Permitted domestic livestock AUM's would remain substantially unchanged.

In the absence of other changes, the net change from the current management direction (the "baseline" condition) indicates a reduced level of economic activity. Estimates of actual job numbers associated with the alternatives are shown in Table II-3a. The nature of employment would change and personal income would decrease as wood products-related jobs decreased and recreation-related employment increased.

The other aspect of this alternative with significant effects on the lifestyle of residents of the three counties would be the construction of roads into areas which are not currently roaded. This would have the direct effect of increasing access to parts of the Forest for hunting and for wood gathering as long as these roads are not closed. The number of people who use those areas would increase but others who enjoyed the characteristics of unroaded hunting might decide to do their hunting off the Forest altogether. The recreational experience for some would change as the opportunities for unroaded recreation decreased. The effects of these new roads would be most apparent in Baker and Union Counties. Many users of the Forest would regret the further reductions in nonroaded recreation opportunities this alternative entails.

No major changes in the visual character of the Forest would occur but more intensive management of young stands would be evident. Mature lodgepole and ponderosa pine stands would be harvested with resultant changes in their visual characteristics.

Beliefs and Perceptions

The practices and outputs of Alternative A (the current management direction) would not be significantly at odds with the beliefs and perceptions of most residents of the three-county area.

As noted above, the changed appearance of some parts of the Forest through the harvesting of mature trees would cause concern; but leaving them would be of equal concern to others with different values. The appearance of a more intensively managed, younger forest may be of concern to some, but older stands will be present elsewhere on the Forest. This alternative would maintain the numbers of permitted livestock. Big-game numbers are expected to stay relatively constant over the next decade, to the general satisfaction of the area's public.

Sense of Control/Sense of Self-Sufficiency

The financial, social, and psychological insecurity associated with the reduced economy would be evident in the current direction alternative. However, the reduction would be mitigated by the fact that there are other sources of timber supply including State, private, and other National Forest lands, and by the large accumulation of timber inventory which purchasers have not yet harvested. At recent historical levels of harvest, this buildup amounts to over three years of cutting as of 1984.

Not only would there be fewer jobs, but they would be lower-paying jobs, resulting in less personal income for the area. However, the local residents' ability to use the Forest without major restrictions would continue and, with new roads, would be enhanced in the eyes of many. Negative effects on employment and income would be countered by increased payments to local governments which would derive from harvesting timber on easily-logged lands.

The roading of unroaded areas would detrimentally affect the sense of control and the sense of self-sufficiency of those who have used them for big-game hunting because of their unroaded condition. This alternative does not nominate any additional wild, scenic, or recreational rivers. Federal designation of rivers threatens the sense of local or private control of many local residents.

Out-of-Area Recreationists

Those favoring roaded recreation would benefit, both in their recreational experience and in their satisfaction that their opinions have been reflected in Forest Service decisions. Those opposed to roads (particularly those who prefer to hunt big game in unroaded areas) realize a loss in their recreational experience opportunities. Some of these changes are more in the manner of adjustments, as when an already roaded area gets an additional road.

Those advocating the nomination of rivers for designation in the National Wild and Scenic Rivers System would also perceive that their level of influence had decreased.

Native Americans

Certain rights and privileges are afforded members of the Nez Perce Tribe and the Umatilla Confederated Indian Tribes by virtue of the treaties of 1855. These treaties resulted in cession by the Indians to the United States of a large territory which includes approximately two-thirds of the Wallowa-Whitman National Forest. The treaties provide that on the ceded lands, the Indians will continue to have the rights of taking fish in streams running through them and at all other usual and accustomed stations in common with the citizens of the United States and of erecting suitable buildings for fish curing; the privilege of hunting, gathering roots and berries, and pasturing stock on unclaimed lands.

The rights of Native Americans to believe, express, and exercise their traditional religious practices (including having access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites) are also protected by law. Because much of their culture and the practice of their religion are related to sites often known only to certain families, site disturbance is of concern both to Forest managers and to tribal members.

Racial and Cultural Minorities and Women

Forest Service effects in these areas can be traced to its own hiring and contracting procedures. With reduced funding and hiring freezes, new employment is at a reduced level and may so continue. Forest hiring practices will continue to follow the National and Regional Affirmative Action Plan. However, since fewer people are being hired, opportunities for recruiting women and minorities will not increase. With reduced timber production levels, the Forest is not expected to appreciably increase its total number of contracts awarded. Reduction in the amount of contracting and Forest hiring are not expected to result in a disproportionate reduction in the employment, contracting, or hiring by contractors of minorities and women, although total numbers may be less.

Comparison of Other Alternatives with Alternative A in the First Decade 3

Lifestyle

Alternatives C, D, and E would be quite similar to Alternative A in that their overall levels of timber offerings would vary upwards from Alternative A by less than 8 percent. The volume would benefit those whose livelihood is directly or indirectly linked to timber processing and would be the kind of increase that could be handled by minor shifts in scheduling or through the use of overtime.

Actual timber harvests on the Forests have historically been higher than those shown for the current direction alternative in the future. Accordingly, these alternatives range downward from recent levels by as much as 10 percent and will be perceived as being undesirable on the part of those whose lifestyles depend on timber production.

These alternatives also would allow for some change in the numbers of domestic livestock permitted on the Forest. The amount of change, ranging from -3 percent to +14 percent is not large and would only take place after completion of allotment-respective plans and arrangement of both permittee and Federal funding. These changes are more in the manner of routine adjustments.

With increased emphasis on the timber harvesting of the more easily logged lands, these alternatives are similar to Alternative A in generating payments to local governments and in providing jobs and personal income in the local area. Alternatives C and D would continue, as would Alternative A, the roading of the Forest with the approval of those who value the Forest most in a roaded condition and to the disappointment of those who see the nonroaded recreational opportunities shrinking further. Alternative E precludes the roading of nonroaded areas, but manages the remaining, already-roaded areas more intensively for timber production, thus generating high levels of timber output.

To the extent individuals focus on timber processing in their lives, Alternatives B, B-departure, C-departure would benefit them. To the extent they focus on nonwilderness unroaded recreation or on accommodating or stressing amenities in general, these alternatives would be a setback.

Alternative B-departure, with its substantial increase in livestock numbers (an increase of 22 percent) might be appreciated by some permittees but it forces economically inefficient development which some permittees would resist. Were these numbers to increase, those recreationists who resent livestock intrusion would find their lifestyles adversely impacted.

All three of these alternatives would have positive impacts on the local economies in terms of providing employment, personal income, and payments to local governments compared to Alternative A.

(Even though the discussion in this section is limited to first-decade effects, note should be made that Alternative C-departure would provide these benefits for the first decade of the plan only, and that B-departure would do so for the first five decades only. In the decade immediately following those periods of departure, Alternatives B-departure and C-departure benefits would fall considerably; in the case of Alternative C-departure to levels below those of the current direction).

Alternative F with its sharply reduced timber harvest levels would seriously harm those whose livelihoods depend directly or indirectly on timber harvesting. Some hardship would also occur for area livestock permittees, though not in the same overall proportions to the whole area's well-being. The 39 percent reduction in sawtimber could not reasonably be expected to be made up from other sources. The 15 percent reduction in Forest grazing would mean roughly a 1.2 percent reduction in area forage supplies. The 39 percent reduction in timber offered for sale would translate into an overall falldown in volume available for the local market of some 20 percent. Even those who advocate a strong amenity emphasis and who would therefore be supportive of this alternative might be dismayed by the financial disadvantages of lessened governmental services, higher taxes, and reduced wholesale and retail trade opportunities.

Alternatives G and H both strive, within the limits of their respective land allocations, to achieve higher degrees of efficiency and accomplish this objective by excluding from harvest those lands which cannot be economically managed for timber production. These significantly lower sawtimber harvests, as much as 10 percent lower, would cause some reduction in lifestyle quality for those dependent on the timber industry. Others, more amenity oriented, would appreciate the reduced harvest levels and the overall reduction in activity on Forest lands.

Attitudes, Beliefs, Values

Those who feel the remaining nonwilderness portions of the Forest should be managed to maximize timber production would have their value systems strengthened by Alternative B's selection. Those who feel the nonwilderness portions of the Forest should be managed to balance emphasis for multiple uses would find this alternative distasteful. The alternative would create far more visible openings in the forest canopy than would Alternative A and more of these openings would be visible from area towns and cities.

Many people feel that the Forest should be managed to ensure that outputs do not decrease over time. They would be unhappy with Alternatives B-departure and C-departure because neither of them sustain their output levels. Alternative B-departure would be especially unacceptable because it continues the departure for five decades. These alternatives would also be upsetting to many who would see them as a capitulation to the timber interests and an abrogation of the rights of recreationists. Alternative C-departure would create more openings in the forest canopy in the first decade than any other alternative with Alternative B-departure a close second, to the displeasure of many residents.

Those who feel that the temporary increases of timber production are warranted for the well-being of the local economy--including area schools, roads, employment, money in circulation--would see their values reflected in these alternatives.

Area residents who have come to accept existing Forest Service practices would most likely find Alternative C and D to be acceptable on the whole, though not in every particular.

Alternative E was tailored to meet the expressed desires of local area inhabitants who felt the Forest should maintain existing roadless areas and pursue timber harvesting aggressively in already roaded areas. Therefore, this alternative would satisfy their aspirations.

Because Alternative F severely limits Forest timber offerings, it would serve to satisfy those who feel the Forest is being harvested too aggressively and/or that the Forest's highest value lies in its ability to offer amenities. Those who feel that any individual's livelihood or ability to support one's self and one's dependents is more important than the recreational pursuits of others would not share those feelings.

Because efficiency was highlighted in Alternative G, it should best satisfy those who call for increased Forest efficiency. With its lower harvest levels, it would conflict with those who believe that a greater commodity emphasis is indicated. It would also antagonize those who feel that amenities have been undervalued. Some would also be offended because Alternative G gives a free rein to harvest timber, sharing the same land allocation as Alternative B--a land allocation which is more conducive to timber production than any other.

Alternative H, though operating with more land available for timber production than Alternative A, harvests less timber in the interest of economic efficiency. With its lower harvest levels, it would conflict with those who believe more commodity emphasis is indicated.

Sense of Control/Sense of Self-Sufficiency

Alternatives B, B-departure, and C-departure would heighten the sense of control or self-sufficiency for those for whom timber processing is of paramount concern. Alternatives F, G, and H would disquiet them while C, D, and E could be accepted, albeit grudgingly. Those who feel the Forest's harvest schedule is too aggressive would feel the opposite.

Those who desire greater efficiency in Forest operations would feel their sense of control especially heightened in the selection of Alternatives G, B, H or E. For those concerned about excessive Forest roading, Alternatives F, G, and H would be especially attractive.

Self-sufficiency, as it relates to Wallowa-Whitman National Forest management, is concerned primarily with employment and personal fuelwood gathering. Thus these considerations are of concern to local area inhabitants. Timber employment so overshadows other Forest-related employment as to make it the final arbiter in this category, especially when considering that the other leading timber concern (personal-use fuelwood gathering) usually goes hand-in-hand with timber production. That is, as more areas are roaded for timber harvesting, more areas become available for the wood gatherers. As timber is harvested, these wood gatherers also benefit from the dead or cull material left behind following the timber sales. The alternatives would, therefore, be ranked in decreasing order: C-departure, B-departure, B, D, E, C, A, G, H, F.

Community Cohesion

Alternatives B, B-departure, and C-departure would serve to heighten the influence of the traditional, familiar bases of employment and economic activity in general. This would further polarize commodity (timber production) versus amenity special interest groups. Alternatives C, D, and E, though more commodity-oriented in their land allocations than the current direction alternative, would better serve the interests of community cohesion in that they, like the current direction alternative, would be viewed as a compromise. In their significantly reduced timber harvest levels and/or intended increases in amenity emphasis, Alternatives F, G, and H would be just as destructive to any spirit of community cohesion as would Alternatives B, B-departure, and C-departure.

Population

Alternatives B, B-departure, and C-departure would provide a stabilizing influence on the area's population. The area has a surplus labor supply as evidenced in its persistently high rates of unemployment. The increases in timber production could most likely be handled with overtime or through scheduling adjustments. Such harvest levels have been accommodated in the past.

Alternatives C, D, and E would be moderately destabilizing though not as severely so as the current direction alternative. The area has already experienced substantial unemployment due to the protracted downturn in the timber industry. Alternatives G and H would cause significantly more out-migration than the current directional alternative; Alternative F even more out-migration.

ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

Overview

This chapter has described numerous adverse effects, most of which cannot be avoided. The following summarizes these effects for Alternative C, the proposed action:

Soil and Water

During the construction of roads, harvesting timber and prescribed burning, soils are impacted through compaction, displacement or heating. This can adversely affect the productivity of the land, and the quality of water when actions take place near water courses. Through careful timber sale layout, properly prepared logging plans, effective sale administrative, careful logging, road maintenance, erosion control structures and vegetation restoration, these adverse effects can be minimized. But there is no doubt that there will be some adverse effects that will tend to lower land productivity and reduce water quality.

Livestock also cause soil compaction, particularly on meadowlands. Careful management can minimize but not prevent some degree of compaction damage. Livestock will contaminate streams where they have free access to them. A certain amount of streamside trampling will occur, as will damage to riparian vegetation. While this may not be considered unacceptable according to regulation or law, it is an unavoidable adverse effect. Elk, deer and other wildlife also contribute to adverse effects along water courses.

Wildlife

The proposed alternative shows a reduction in the amount of mature and old-growth trees. Since some wildlife species rely on habitat conditions provided by mature or old-growth tree stands for their habitat during part of the year, a reduction in the numbers of some wildlife species that depend on these conditions is unavoidable.

Alteration of vegetation through timber harvest and stand improvement practices will cause temporary or permanent displacement of many wildlife species to some degree. Cavity nesting habitat will be particularly reduced, thereby eventually reducing dependent species to populations less than two-thirds of present levels.

Control of insects through the use of insecticides will reduce food supplies for insect-dependent birds. This is due to the reduction of the target insect species as well as the reduction in insect species that are not targeted. Although effects on the food supply are usually short-term, they are effects that can seldom be avoided.

Recreation

As the character of the Forest changes, so do the recreational opportunities. Although the total recreational opportunity will remain near the present level, certain experiences will change. There will be fewer areas without roads and timber harvesting in which to hunt or hike and fewer mature and old-growth dependent wildlife species such as the pileated woodpecker to view. In some areas, trails will be replaced by roads. These effects are unavoidable and will be considered adverse by many people.

Landscapes

The most noticeable unavoidable effects of human activity are those caused by manipulation of vegetation. The effects of timber harvest and related activities are especially apparent because of the large areas involved. Power transmission corridors also create highly noticeable changes in vegetation patterns. To a considerable extent these adverse effects can be mitigated. Nonetheless, major changes in vegetation will at times be obvious from travel routes in all areas of the Forest except in those areas where significant alterations in vegetation are prohibited or restricted, such as in wilderness.

Air Quality

Air quality will be temporarily degraded in local areas as a result of prescribed fire and wildfire for brief intervals during the year.

Use of Herbicides, Insecticides and Rodenticides

Herbicides, insecticides, and rodenticides are tools for controlling vegetation, insects, or rodents, respectively. They are employed when their use is more cost effective than other means of control, or constitute the only known methods for effective control. Although used according to rigid specifications, circumstances will occasionally result in sprayed chemicals drifting to nontarget areas or streams and damaging flora or fauna that were not intended for spraying. There is also the possibility of herbicide or insecticide spills due to accidents; and there is a possibility of non-target animal species finding and consuming rodenticides directly or from ingesting target species that have consumed a chemical.

To remove all risk would render the use of chemicals ineffective or impractical. Therefore, the possibility and likelihood that adverse effects will occur is unavoidable.

Native Americans

Native Americans may be adversely affected by any ground-disturbing activities because their cultural ties to the Forest are often site-specific; roading and logging an area can reduce or destroy its attraction. Though the tribes have not always provided exact site locations, the final effect of any alternative can be assumed to be negative in general proportion to its level of timber harvest. Livestock grazing also has an adverse impact on Native Americans in that livestock eat the identifying tops of plants which are sought by tribal members.

RELATIONSHIP BETWEEN SHORT-TERM USES OF THE HUMAN ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The long-term productive capability of all resources depends on maintaining soil stability and soil fertility, including keeping the soil in a noncompacted condition that is conducive to plant growth. While we understand and can deal with soil stability, there is still much to be learned about soil-plant nutrient relationships in forest systems. The effects of prescribed burning on the nutrient cycles are not fully known, nor are the effects of soil compaction which result from operating heavy machinery or from grazing animals.

The long-term effects of whole-tree utilization on fertility are not fully understood. Recent studies show that reductions in woody debris can have significant impacts on stream nutrients and aquatic life (Maser and Trappe 1984). It is evident that fallen trees provide habitat for a vast array of insects and other organisms. We need to learn more about the contribution of fallen trees to forest ecosystems and to the quality of soil in particular.

At present, we can be certain that those areas dedicated to permanent roads, campgrounds, or other facilities reduce long-term land productivity to a significant extent.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposal provides for management activity in areas that are currently undeveloped, thus foregoing their being further considered for wilderness. To the extent that the areas become altered before the next Forest Land and Resource Management Plan is written, those altered areas are irreversibly lost for potential wilderness consideration.

With all alternatives, several of the management areas offer varying degrees of irretrievable commitment of wood fiber production. Examples are Management Areas 6 and 15. Although conditions for producing high levels of wood fiber production can be realized by reallocating the lands, production lost in the interim cannot be retrieved. Similarly, certain wildlife populations are likely to be reduced due to loss of habitat such as old-growth forest and snags. The habitat can be restored in the future but the interim loss is irretrievable.

Because minerals are not renewable resources, the loss of mineral wealth removed from the Forest is irreversible and irretrievable.

Chapter V

LIST OF PREPARERS

CORE TEAM

Baglien, John:	B.S., M.S., Fish and Wildlife Management: (Planning Team Coodinator) FORPLAN Analysis, Wildlife Biology, Timber Inventory, Minimum Management Requirements, 10 years experience.
Johnson, Lawrence:	B.S., Civil Engineering: FORPLAN, IMPLAN, INTEGER, Roadless Areas, Energy, Data Management, 24 years experience.
Mattson, Philip:	B.S. Forestry: Hydrology, Sediment, Forestry, 11 years experience.
McMillan, Bruce:	B.S. Forestry: (Planning Staff Officer) Forest Management, 25 years experience.
Pekar, Dale:	B.A. Economics and Sociology, M.S. Economics: Economic and Social Analysis, Cost Data, INTEGER, IMPLAN, 9 years experience.

ANALYSIS SUPPORT

Collard, Ernest:	B.S., M.S., Forest Management: Timber Yield Tables, PROGNOSIS, Silvicultural Prescriptions, 27 years experience.
Cunningham, Robert:	B.A., M.A., Forest Recreation: Wilderness Planning, 13 years experience.
Mangan, Richard:	B.S. Forestry: Fire Management Planning, 13 years experience.
Northman, Robert:	B.S. Forest Management: Timber Management Planning, Logging Systems, and Logging Costs, 30 years experience.
Simonski, Philip:	B.S. Forestry: Timber Inventories and Stand Mapping, 26 years experience.

Terry, Dorothy:	B.S. General Studies: Wild and Scenic River Descriptions, Roadless Area Descriptions, Data Management, Editing, 11 years experience.

TECHNICAL SUPPORT

Alexander, Janet:	Data Storage and Retrieval, 8 years experience.
Ames, Lloyd:	Old-Growth Forest Inventory, 6 years experience.
Anderson, David	Fire Management Planning, 26 years
Anderson, Ralph:	Old-Growth Forest Inventory, Big-Game Winter Range, 17 Years experience.
Aschenbrenner, Larry:	Logging Systems, Logging Costs, 15 years experience.
Austin, John	Transportation Planning, 22 years experience.
Avery, Daniel:	Geology and Minerals, 15 years experience
Barney, Robert:	Range Capacities for Research Natural Areas, 13 years experience.
Barton, Douglas:	Utility Corridors, La Grande Municipal Watershed Planning, 22 years experience.
Brockus, Gayla:	Public Involvement, Mailing List, 9 years experience.
Cates, Gordon:	Transportation Planning, 16 years experience.
Clemens, David:	Old-Growth Forest Inventory, Management Area Boundaries, 22 years experience.
Crist, Carey:	Old-Growth Forest Inventory, Management Area Boundaries, 10 years experience.
Curtis, Dean:	Old-Growth Forest Inventory, 14 years experience.
Ehmer, Lee:	Suitability of Land for Timber Production, 22 years experience.
Ernst, Charles:	Range Management Planning, Livestock Capacities, 15 years experience.
Farr, Leonard:	Old-Growth Forest Inventory, Management Area Boundaries, 21 years experience.

Fessel, William:	Recreation Planning, Recreation Opportunity Spectrum, 32 Years experience.
Fletcher, Steven:	Land Suitability for Timber Production, Old-Growth Forest Inventory, Management Area Boundaries, 17 years experience.
Glassford, Thomas:	Wilderness Planning, 16 years experience.
Hauter, Kenwood:	Baker Municipal Watershed Planning, 20 years experience.
Hedgpeth, Glenn:	Land Suitability for Timber Production, Old-Growth Forest Inventory, Silvicultural Prescriptions, 22 years experience.
Hermsen, Lucille:	Graphics, Visual Aids, Tables, Maps, 24 years experience.
High, Thomas:	Land Suitability for Timber Production, 14 years experience.
Hohman, Kenneth:	Floodplain Identification, 11 years experience.
Holden, Arnold:	Social Analysis, 9 years experience.
Johnson, Dr. Charles:	Research Natural Areas, Ecology, 15 years experience.
Kaufman, Bruce:	Timber Management Planning
Kaplan, Gerald:	Management Area Boundaries, Old-Growth Forest Inventory, La Grande Municipal Watershed Planning, 24 years experience.
Kuchenbecker, Lyle:	Social Analysis, land suitability for timber production, 12 years experience.
Leonard, R. Michael:	Old-Growth Forest Inventory, Riparian Habitat Inventory, Big-Game Winter Range Boundary, 11 years experience.
Little, David:	Land Suitability for Timber Management, 21 years experience.
Luce, Nicole:	Data Storage and Retrieval, 11 years experience.
Marvin, Frances:	Multi-year Budgeting, 24 years experience.
McEwan, Linda:	Old-Growth Forest Inventory, 8 years experience.
McGinty, Pauline:	Land Adjustment Plan, 24 years experience.

Miller, Rod:	Fisheries, Riparian Habitat Inventory, Range Planning, Big-Game Forage Needs, 27 years experience.
Olson, Frank:	Social Analysis, 27 years experience.
Perrigan Steve:	Old-Growth Forest Inventories, 23 years experience.
Petersen, Gary:	Old-Growth Forest Inventories, Land Suitability for Timber Management, 14 years experience.
Puddy, Susan:	Old-Growth Forest Inventory, 10 years experience.
Pyles, Bruce:	Old-Growth Forest Inventory, Management Area Boundaries, 30 years experience.
Rasmussen, Frank:	Old-Growth Forest Inventory, Management Area Boundaries, 31 years experience.
Reagan, Michael:	Archaeology, Cultural Resources, 16 years experience.
Schimke, Arthur:	Old-Growth Forest Inventory, Management Area Boundaries, 28 years experience.
Schrenk, Robert:	Management Area Boundaries, 16 years experience.
Sines, Roy:	Wilderness Planning, 35 years experience.
Smith, Susan:	Graphics, Data Management, 4 years experience.
Smith, Wanda:	Data Storage and Retrieval, 10 years experience.
Spink, Louis:	Range Management Planning, Livestock Grazing Capacities, 26 years experience.
Stamy, Roger:	Land Adjustment Plan, Recreation Planning, 33 years experience,
Stephens, Joaquin:	Baker Municipal Watershed Planning, Grazing Capacities, 27 years experience.
Stewart, Ralph:	Research Natural Areas, Grazing Capacities, Management Area boundaries, 13 years experience.
Symons, Richard:	Land Suitability for Timber Production, Silvicultural Prescriptions, Old-Growth Forest Inventory, 16 years experience.

Szymoniak, Mary Ann:	Data Storage and Retrieval, 6 years experience.
Taylor, Brandon:	Logging System and Logging Costs, 15 years experience.
Thomas, Thomas:	Old-Growth Forest and Riparian Habitat Inventories, Big-Game Winter Range Boundaries, 14 years experience.
Titus, Ronald:	Old-Growth Forest Inventory, Management Area Boundaries, 28 years experience.
Tyler, Gregory:	Data Storage and Retrieval, 7 years experience.
Walker, Ralph:	Old-Growth Forest Inventory, Land Suitability for Timber Production, 14 years experience.
Wilkens, John:	Lodgepole Pine Utilization and Yield Projection, 19 years experience.
Wilson, Jerry:	Visual Management Inventory, Viewsheds, 20 years experience.
Wyland, Dave:	Logging Systems and Costs, 17 years experience.

The foregoing is, at best, a partial list in that it does not include the many Regional Office personnel who helped; nor does it include many people from the Forest who developed file data which was drawn upon in making the analysis and plan; neither does the list include many non-Forest Service people who made important contributions.

Chapter VI

LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF THE STATEMENT WERE SENT

FEDERAL OFFICIALS AND AGENCIES

American Institute of Biological Sciences
Dept. of Public Responsibilities

American Institute of Biological Sciences
Ethel M. Leeper

Archaeology and Historic Sites
Dr. Evan I. Debloois

Arleigh Isley, County Agent

Army Corps of Engineers

Bonneville Power Administration
Environmental manager

Congressman James Weaver

EIS Review Coordinator Region X

Environmental Protection Agency

Environmental Protection Agency
EIS Review Coordinator

Equal Employment Opportunity Commission
Office of the Deputy

Federal Aviation Administration
Northwest Region

Federal Energy Regulatory Commission

Federal Highway Administration
Region 10, Regional Aministrator

Federal Railroad Administration

Forestry & Range Sciences Lab
Jack Ward Thomas

Forestry Science Lab
Bob Moseley

General Services Administration
Environmental Affairs Division

Honorable Robert W. Packwood
United States Senate

Industrial Forestry Assn.
N.E. Bjorklund

Interstate Commerce Commission

NOAA Ecology & Conservation Division

National Endowment for the Arts

Natl. Marine Fisheries Service
Dept. of Commerce, NOAA

Natl. Marine Fisheries Service
Habitat Conservationists Division

Natural Resources Defense Council

Office of Architectural &
Environmental Preservation

Office of Environmental Review

Office of Policy & Plans

Representative Les AuCoin

Senator Mark O. Hatfield
Mike Salsgiver, Field Rep.

U.S. Air Force

FEDERAL OFFICIALS AND AGENCIES

U.S. Army Corps of Engineers

U.S. Coast Guard

U.S. Dept. of Agriculture APHIS

U.S. Dept. of Agriculture EEO

U.S. Dept. of Agriculture REA

U.S. Dept. of Agriculture SCS

U.S. Dept. of Commerce

U.S. Dept. of Defense
Deputy Asst. Secretary of Defense

U.S. Dept. of Defense
Explosive Safety Board

U.S. Dept. of Energy NEPA Affairs

U.S. Dept. of Health & Human Services

U.S. Dept. of Transportation

U.S. Dept. of the Interior

U.S. House of Representatives

U.S. Naval Observatory

U.S. Navy Office of Chief
of Navy Operations

U.S. Dept of Energy Office
of Environmental Comp.

U.S. Department of Agriculture
Agricultural Stabilization &
Conservation Comm.

U.S. Department of Interior
Bureau of Indian Affairs

U.S. Dept of Interior
BLM Idaho State Office

U.S. Dept. of Housing & Urban Devel.

U.S. Dept. of Interior
BLM Oregon State Office

USAC Mining Division

USDA Cooperative Extension Service

USDA FS Bridger-Teton NF
Carl Pence

USDA FS Bridger-Teton NF
George Gruell

USDA FS Colville NF

USDA FS Deschutes NF

USDA FS Gifford Pinchot NF

USDA FS Fremont

USDA FS Intermountain Region
John Marker

USDA FS Malheur NF John Day

USDA FS Mt Baker-Snoqualmie NF

USDA FS Mt. Hood Land Mgt. Planning

USDA FS Mt. Hood NF

USDA FS Nezperce NF

USDA FS Nezperce NF

USDA FS Nezperce NF, Forest Supervisor

USDA FS Northern Region
James Reid

USDA FS Ochoco NF

USDA FS Okanogan NF

USDA FS Olympic NF

USDA FS PNW FSL
Sarah Greene

USDA FS Pacific NW Region
Tom Nygren, PP&B

USDA FS Pacific Southwest Region

FEDERAL OFFICIALS AND AGENCIES

USDA FS Payette NFH.
Drew Bellon

USDA FS Payette NF
Weiser Ranger District

USDA FS Regional Forester

USDA FS Rogue River NF

USDA FS Sawtooth NF, Forest Supervisor

USDA FS Siskiyou NF

USDA FS Siuslaw NF

USDA FS Southwestern Region

USDA FS Umatilla NF

USDA FS Umatilla NF
North Fork John Day Ranger District

USDA FS Umpqua NF

USDA FS Wenatchee NF

USDA FS Winema NF

USDA Soil Conservation Service
Baker

USDA Soil Conservation Service
Enterprise

USDA Soil Conservation Service
Hugh Barrett

USDI BLM BIFC
Jack Wilson, Director

USDI Bureau of Land Mgt.

USDI Bureau of Mines SROSA

USDI Bureau of Mines
Western Field Operation Center

USDI Office of Environmental
Project Review

Willamette National Forest

INDIAN TRIBES

Committee Chairman

Confederated Tribes of Umatilla

Elwood Patawa

Nez Perce Tribal Executive

STATE OFFICIALS AND AGENCIES

Governor Victor G. Atiyeh

Idaho Historical Society
State Archaeologist

Idaho State Dept. Parks & Recreation
Wm. H. Hagdron, Chief

Interagency Comm. for Outdoor Rec.
State of Washington

Occupational Safety & Health

Oregon Dept. of Forestry
Gary Rudisill

Oregon State Dept. of Fish & Wildlife
Dan Eastman

Oregon State Forestry Dept.
Forest Resource Study

Oregon State Dept. of Forestry
Mark Jacques

STATE OFFICIALS AND AGENCIES

Oregon State Forestry Office
Resource Planning Director

Oregon State Parks
Cindy Vergari

Oregon State Parks
John Lilly, Assistant Mgr.

Washington State Dept. of Game

LOCAL OFFICIALS AND AGENCIES

Asotin Bd. of Commissioners

Asotin Co. Planning Commission

Baker Co. Bd. of Commissioners

Baker Co. Chamber of Commerce

Baker Co. Extension Agent

Blue Mt. Intergovernmental Council
Wallowa Co. Courthouse

City Manager of Baker

Eastern Oregon Community
Development Council

Oregon State Dept. of Geology & Mineral
Howard Brooks

Union County Courthouse
Planning Commission Office
Hanley Jenkins

Union County Judge

Wallowa County Bd. of Commissioners

Wallowa Co. Planning Commission

LIBRARIES

Asotin Co. Library

Baker Co. Library

Boise State University Library

La Grande Public Library

Linda Hall Library

Oregon State Library

Pacific Power and Light Co. Library
Susan Jackson, Librarian

University of California
Forestry Library

University of Idaho Library

University of Minnesota
Forestry Library

Walla Walla District Library

Wallowa Co. Library

Washington State University
Owen Science & Energy Library

COLLEGES AND UNIVERSITIES

Arizona State University
Prof. William L. Graff

Augustana College

Boise State University
Government Documents

Boise State University
Dept. Societal & Urban Studies

COLLEGES AND UNIVERSITIES

Central Ore. Community College
A. Henson

Central Washington University
James Alexander

Eastern Washington University
Jay W. Rea

Idaho State University

Oregon State University
Environment Center Coordinator

University of Florida
Charlene Alexander

University of Idaho
College of Forestry

University of Idaho
Jo Ellen Force

University of Idaho
Wm. J. McLaughlin

University of Washington
Gordon Bradley

University of Washington
Westfornet-Seattle

Washington State University
Dr. David Stratton

Washington State University
Program in Environmental Science

ORGANIZATIONS

AM Forestry Institute

AM Motorcycle Assoc.

AM Motorcycle Assoc.

Aircraft Owners and Pilots Assoc.

Am Rivers Conserv. Council

Anaconda Copper Co.

Anderson, Perry & Assoc. Inc.
Baker Co. Cattlemens Assoc.

Anthony Lakes Corp.

Asarco, Inc.

Associated Oregon Industries

Associated Oregon Loggers
Greg Miller

Association of Oregon Archaeologists
Paul Christy Jenkins

Association of Oregon Counties
Bill Grannell

Atlantic Richfield
C. M. Moseley

Audubon Society
Morey Haggin

Blue Mtn. Resources Council

Boise Cascade Corp.
Fred W. Ebel

Boise Cascade Corp.
John E. Reed

Boise Cascade Corporation
Gaylord Houghton

Boise Cascade Corporation
Harry Teilmann

Boise Cascade Corporation
Lew Work

Boise Cascade Corporation
R. Kirk Ewart

CHEC
Randy O'Toole

ORGANIZATIONS

Calif. Polytechnics S. Univ.
Deborah J. Allen

Central Idaho Star News

Cherry Cr. Sheep Company Inc.
Leo Gorbett

Crown Zellerbach Corp.
Timber Valuation Supervisor

Daily Argus Observer

Democrat-Herald

East Central Ore. Assoc.
of Counties

East Oregonian

Ellingson Lumber Co.

Ellingson Lumber Company
Gary L. Johnson, Logging Mgr.

Evergreen Forest Products
Robert T. Hitchcock

Friends of the Earth

Garrett Investment Co.

Grand Canyon Dories
Martin Litton

Grande Ronde Resource Council

Guy Bennett Lumber Company

Harris Pine Mills

Hells Canyon Preservation Council
John Barker, President

Hells Canyon Preservation Council
Ken Witty

Idaho Forest Council

Idaho Mining Assoc.

Idaho Outfitters & Guides Assoc.

Idaho Power Company
Allan R. Ansell

Idaho Power Company
Russ Biaggne, Manager

Idaho Steelhead & Salmon Unlimited
Gary E. Busch

Idapine Mills, Inc.

Imnaha Grange

Izaak Walton League
Tim Giesenn

James A. Kittrick

KLBM/AM KREC/FM

Kamiah Mills
Donald E. George

Ken Rogge Lumber Company
Ken Rogge

KOIN TV/Bud Beechwood

La Grande Observer
Brian White

La Grande-Union Chamber of Commerce

Lew Brothers Tire Service Employees

Lewiston Morning Tribune
Bill Coftus

Louisiana-Pacific Corp.
Tim Gammell

Malheur County Bd. of Commissioners

Maville Products Corp.
Joseph Levay

Mazamas Conservation Committee

National Wildlife Federation

Noranda Exploration Inc.

ORGANIZATIONS

Northwest Mineral Prospectors Club
Skip Hermen

Northwest Timber Assoc. A. Ewing

Oregon Council, Rock & Mineral Clubs
Harold M. Dunn

Oregon Earth First
Ric Bailey

Oregon Environmental Council

Oregon Equestrian Trails
Edwin E. Crawford

Oregon Hunters Assoc.
L. E. Rarey

Oregon Mine Operations
Bonnie Payton

Oregon Motorcycle Riders Assoc.
Sharon Argo, President

Oregon Natural Resources Council
Andy Kerr

Oregon Wilderness Coalition Jas.
Jeffrey Adams, Attorney

Oregon Wildlife Federation

Pacific NW Ski Assoc.
Mel Borgersen

Pacific Northwest 4 Wheel Drive Assoc.

Peacock Lumber Co.

Phillipa Petroleum
J. E. Matthews

Powder River Sportsman Club

Prairie Wood Products Co.

Public Lands Restoration Task Force

Record Courier
Byron Brinton

S&G Machinery
John Stebbins

Salmon River Chamber of Commerce

Sequoia Forest Ind-Joseph Division
Robert Beaubeir

Sierra Club
Pete Wyman

Sierra West

Spokane Daily Chronicle
Fenton Roskelley

The Associated Press
Quane Kenyon

The Nature Conservancy
Dick Vander Schaaf

The Wilderness Society

The Wilderness Society
Jean Durning

The Wilderness Society
Jean Durning

U.S. Borax
Jackie E. Stephens

Union Commercial Club

Union Oil Co. of California
Joseph Wilson

University of Oregon ASUO-Survival Center

Wallowa County Chamber of Commerce

Wallowa County Chieftain

Wallowa Resource Council
Michael Bohannan

Washington Forest Protection Agency

Washington Native Plant Society
Mark Egger

ORGANIZATIONS

Western Forest Industries Assoc.
Wayne W. Gaskins

Western Forestry & Conservation Assoc.
Robert Tokarczyk, Executive Director

Western Whitewater Assoc.
John Binder

Western Wood Products Assoc.
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Weyerhauser Co.
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Wildlife Mgt. Institute
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Gary Anderson

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Ed Anicker

Ed Ankrom

Ed Archer

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Del Blackburn

Robert Blackburn

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John Boyer

Lynn Brassard

Howard Brooks

Charlotte Brown

Will H. Brown

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Avid & Nancy Bucy

Richard Bush

Herbert D. Butler

Larry Calkins

Lee Carter

D. Cash

M. Lee Cater

Gene & Elva Chetwood

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Robert Cicisley

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Jim Clemons

Don Coppock

Roy E. Cotton

Dr. Phillip Crabtree

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Jeffrey Crook

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Vern Dennis

Lawson Denny

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William Dodds

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Cecil L. Edwards

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Wayne Eppenbach

J. D. Evans

James S. Evans

S. J. Farris

Max Ferguson

James Ferns

Roger Fight

Gene Fletcher

Bob Franklin

Charley P. Franklin

Donald Franzwa

William E. Freehafer

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Martin Girrard

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Haberman & Son

Carson Haefer

Rick Haley

Wendell P. Haley

Robert & Marie Hall

Wade Hall

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George A. & Bessie Hansen

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Al Haroun

Alice Harper

INDIVIDUALS

John Hatton

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Floyd Held

Ralph Hensley

Edwin L. Hill

Charles E. Hofmann

Edward L. Holbrook

Robert Holland

Peter C. Holman

Warren Howe

Vaughn Hubbard

Del Hufford

Loren Hughes

Mark Hughes

Lawrence E. Hunt

Pearl Ingle

Rod Irby

Arleigh Isley

Paul Jayo

Raymond Johnson

Charles Jones

Mike Jones

Gary Jones

Mr. & Mrs. Alvin Joseph, Jr.

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Glen Kaufman

Michael J. Kellett

Bill Kelso

Mark S. Kiethy

Fred Koontz

Kim Kelly Kreinbring

J. H. Kuitert

Nancy Kvanne

Gary Lane

Jack & Pat Larrabee

Jerry Lauer

Bennie Laurence

Kenneth F. Lawrence

Stanley J. Lenox

John Leonard

David Light

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Morley Madden

Ed Markham

Wayne Marks

Gerald Maxwell

Thelma Maxwell

INDIVIDUALS

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Robert McKim

Mr. & Mrs. Melton

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Harvey Meyer

M. W. Miller

Ron Miller

Steve Minor

Chary Mires

Joe Montgomery

Carl Newport

Mr. & Mrs. Nibler

David Noble

Stephen J. Nofield

Donald & Vadna Norton

W. H. Oberteurffer

Paul Oester

Steve Omann

Jan Patterson

Marvin Pilkenton

Allen Piquet

Melvin Ponter

Bob Powne

Gail Poyser

Bogas Puckett

Charles Quaintance

Fred S. Rader

J. L. Rand

Leon Rayls

Dan R. Reece

John Reed

Elizabeth Reid

Jack Remington

Keith Rogers

Bill Rompa

Larry Roumpf

Marcy M. Sandgathe

Spud Savage

Robert V. Sawalish

Bob Scarbrough

Joseph C. Schott

Lori Schuchardt

Keith Schuchardt

Jack L. Shaffer

David C. Silven

Michael Singleton

Lucia N. Skov

Gregg Smith

Gary N. Smith

Lou Sowa

Peter Speece

INDIVIDUALS

T. Stanford, MD
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John Stebbins
Ralph Steed
Robert Stephens
Earl Suitter
Floyd Taylor
Charles A. Taylor
Betty Terry
Gary M. Thomas
Bill Thomason
Oscar R. Thomsen
Donald G. Tippett
John V. Toman
Dennis C. Turner
Jim Walker
Andrew Wallingford
Alvin Ward
John Washburn
Zelma M. Weatherman
Ferris Weddle
Phyllis E. White
Wilson Wilde
Robert Wilkins
Ron Willden
Ken G. Williams
Terry Williams
M. L. Williams
Dr. Alma V. Williams-Selleck
J. Howard Williamson
Mike Wilson
Jim Van Winkle
William Winter
Robert Wirth
W. T. Wisbeck
Mark Wisdom
Mrs. Norman J. Wise
Ron Wise
Floyd W. Wisely
Richard L. Wize
Donald J. Wolfe
Duane Wolfersperger
Ferrin Woll
Kent Woodruff
John & Nance Woolley
O. E. Wordahl
Lewis M. Work
Al Worley
Richard C. Wright
Virgil Wunder
Nina Wunder

INDIVIDUALS

Dwight O. Wyckoff

Teunis J. Wyers

Rich Yankey

Roger Yerke

Galen York

Kifar Yosemite

Joe & Dolores Young

Phil Young

Chapter VII

REFERENCES

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Chapter VIII

GLOSSARY

These definitions apply to Forest Service land management and planning. Meanings may differ when used in other contexts. A source code is shown for each definition, and is found at the end of the glossary. Some definitions were shortened, paraphrased, or adapted to fit local conditions.

Source

1 Abiotic - Not involving or produced by organisms.

10 Acre-Foot - The volume (as of irrigation water) that would cover one acre to a depth of one foot.

11 Aerial Logging - A timber yarding system employing aerial means, e.g., balloons or helicopters, to lift the log or logs.

1 Age Class - The average age of the timber stand in decades.

1 Allocated Funds - Those funds transferred to the Forest from other agencies (including those from the Land and Water Conservation Fund, the Department of Labor, and the Soil Conservation Service) or provided from the K-V, Brush Disposal, Co-op Road Maintenance, or Purchaser Road Credits accounts.

Allotment - See Range Allotment.

3 Allowable Sale Quantity - The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity." (It is the same as total chargeable volume.)

1 Amenity Values - An expression of the aspects of pleasantness or desirableness commonly associated with recreation, scenic and wildlife-related experiences.

5 Anadromous Fish - Those species of fish, spawned in fresh water, which mature in the sea, and migrate back into fresh water streams to spawn. Salmon, steelhead, and shad are examples.

1 Analysis Area - The most specific classification of land used for allocation or scheduling within FORPLAN.

18 Animal Unit - Considered to be one mature (1,000 lb.) cow or the equivalent based upon average daily forage consumption of 26 lbs. dry matter per day.

18 Animal Unit Month (AUM) - (1) The amount of feed or forage required by an animal-unit for one month. (2) Tenure of one animal-unit for period of one month.

1 Appropriate Suppression Response - An action on a wildfire that minimizes cost plus net value change.

2 Appropriated Funds - Funds from the U. S. Treasury which Congress has authorized an agency to obligate.

AUM - See Animal Unit Month.

1 Available - Land which has not been administratively or legislatively withdrawn from timber production.

1 Available Forage - The amount of forage which may be removed without adversely affecting the vigor of the forage plants. (Normally considered to be about 50 percent of a grass plant.)

7 Basal Area - The area of the cross section of a tree stem near its base, generally at breast height, 1.37 meters (4.5 ft) above the ground and inclusive of bark.

5 Base Flow - That portion of the water flowing in a stream which is due to ground water seepage into the channel.

3 Base Sale Schedule - A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity. (Includes only chargeable timber volume.)

10 Batholith - A great mass of intruded igneous rock that for the most part stopped its rise a considerable distance below the surface.

1 Benchmark - A reference point for a particular analysis.

1 Benefit-cost Ratio - Measure of economic efficiency, computed by dividing total discounted benefits by total discounted costs.

2 Best Management Practices - A practice or combination of practices determined by a State (or designated area-wide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of water pollution generated by nonpoint sources to a level compatible with water quality goals.

1 Big Game - Large mammals hunted for recreation or meat; refers to elk and mule deer when used in this document and not otherwise qualified.

1 Biological Carrying Capacity - The number of animals that an area can sustain due to the condition of various habitat factors.

3 Biological Growth Potential - The average net growth attainable in a fully stocked natural forest stand.

1 Biological Needs - The combination of habitat factors necessary to sustain an organism throughout normal life processes.

10 Biotic - of or relating to life; especially: caused by living beings.

1 Biscuit Scabland - Also termed biscuit-swales, mounded topography, and patterned ground. For the purpose of this document biscuit scabland means natural mounds surrounded by or interspersed with either shallow-soiled swales or scabland. The mounds, typically composed of medium-textured soils, are normally capable of supporting a dense cover of grasses, forbs, and occasionally shrubs. The swales, typically rocky with somewhat coarser textured soils, are normally sparsely vegetated with grasses, forbs, and moss. The scablands are either devoid of vegetative cover or are vegetated by grasses and moss.

10 Board Foot - A unit of quantity for lumber equal to the volume of a board 12 inches x 12 inches x 1 inch.

12 Broadcast Burn - Allowing a prescribed fire to burn over a designated area within well-defined boundaries for reduction of fuel hazard or as a silvicultural treatment, or both.

10 BTU (British Thermal Unit) - The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at or near 39.2 F.

10 Canopy - The uppermost spreading, branchy layer of a forest.

7 Canopy Closure - The progressive reduction in space between tree crowns as they spread laterally (Ford-Robertson 1971); a measure of the percent of potential open space occupied by the collective tree crowns in a stand.

3 Capability - The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils, and geology, as well as the application of management practices, such as silviculture or protection from fire, insects and disease.

1 Capability Area - A combination of land type and working group which describes the biological potential of the land and the physical limitations on realizing that potential.

Capable - See Commercial Forest Land

1 Chargeable - Volumes of timber that are included in calculating regulated timber sale schedules and charged to that harvest in determining target achievement.

2 Class I Stream - Perennial or intermittent streams (or segments thereof) that are direct sources of water for domestic use, or are used by large numbers of fish for spawning, rearing or migration, or flow enough water to be a major contributor to the quantity of water in a Class I stream.

2 Class II Stream - Perennial or intermittent streams (or segments thereof) that are used by moderate though significant numbers of fish for spawning, rearing or migration, have a moderate influence on a Class I stream, or are a major contribution to a Class II stream.

2 Class III Stream - All other perennial streams or segments thereof not meeting higher class critiera.

2 Class IV Stream - All other intermittent streams not meeting higher class criteria.

5 Clearcutting - Removal of virtually all the trees, large or small, in a timber stand in one cutting operation. Leads to the establishment of an even-aged stand.

7 Climax - The culminating stage in plant succession for a given site where the vegetation has reached a highly stable condition.

CMAI - See Culmination of Mean Annual Increment.

CFR - Code of Federal Regulations.

1 Coefficients - The average amount of commodity or amenity value that can be expected from one acre of land in one year under a certain management prescription.

12 Commercial Forest Land - Forest land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.

11 Commercial Thinning - Any type of thinning of trees producing merchantable material at least equal to the value of the direct costs of timber harvesting.

12 Commodity - A transportable resource product with commercial value; all resource products which are articles of commerce.

Common Minerals - See Common Varieties.

2 Common Varieties - Mineral deposits which, although they may have value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts, do not possess a distinct, special economic value. Examples include common varieties of sand, stone, gravel, pumice, pumicite and cinders.

7 Community Types - A generalized category comprising a number of similar stands of vegetation and including animal life.

2 Confine - As used in reference to fire, to restrict a wildfire within determined boundaries established either prior to the fire, during the fire, or in an Escaped Fire Situation Analysis.

1 Conflagration - A large and destructive fire (see Wildfire).

Constant Dollars - See Real Dollars.

2 Contain - As used in reference to fire, to surround a fire, and any spot fires therefrom, with control line as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions. May refer to a wildfire "contained" by topographic or geologic features, such as non-flammable cliffs or talus slopes.

2 Control - In wildfire suppression, to complete the control line around a fire, any spot fires therefrom and interior islands to be saved; burn out any unburned areas adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line.

3 Corridor - A linear strip of land identified for the present or future location of transportation or utility rights-of-way within its boundaries.

- 12 Corridor Avoidance Area - Area with high resource values which are in conflict with power transmission facilities. Used for power facility corridors only when other reasonable choices are not available.

- 12 Corridor Exclusion Area - Area from which power transmission facilities will be excluded. Classified wilderness is the most common example.

- 12 Full Corridor - Approximately 600 feet wide (or wider where existing corridor is wider).

- 12 Utility Corridor - A strip of land, up to approximately 600 feet in width, designated for the transportation of energy, commodities and communications, by railroad, state highway, electrical power transmission (66 KV or more), oil, gas and coal slurry pipelines 10 inches in diameter and larger, and telecommunication cable and electronic sites for interstate use.

- 12 Existing Utility Corridor - A strip of land containing one or more existing linear utility rights-of-way which, in the current Forest planning effort, are being included within the designation of a full 600-foot utility corridor in order to facilitate future authorization of additional utility rights-of-way.

12 New Utility Corridor - A strip of land containing no existing linear utility right-of-way, but warranting designation as a full corridor.

12 Critical Window - A control point or area (such as a mountain pass) not to be designated within an existing utility corridor, but needed to retain future new utility corridor options.

12 Transportation Corridor - A strip of land of variable width designated to accommodate the clearing and access control and visual resource limits of a highway or road facility, which may also be designated to accommodate one or more linear utilities.

2 Cost, Fixed - A cost that is committed for the time horizon of planning or the decision being considered. Fixed costs include fixed ownership requirements, fixed protection, short-term maintenance, and long-term planning and inventory costs.

2 Cost, General Administration, Fixed - A cost of line officers, their immediate clerical staff, and common services (such as joint-use facility and equipment management). It is a fixed cost.

2 Cost, General Administration, Variable - A general administration cost that varies with levels of program activities, including program support (personnel, fiscal and accounting, data processing, and similar functions). Such costs are prorated over all other fixed and variable costs.

2 Cost, Investment - A cost of creating or enhancing capital assets, including costs of administrative or common-use transport facilities and resource management investments.

2 Cost, Non-Forest Service - A cost of investment and operating activities paid by cooperators or other non-Forest Service agencies, which are part of Forest Service management programs or which contribute to the outputs included in the analysis.

2 Cost, Operational - For the National Forest System, a cost of activities to plan and manage controlled outputs, and for long-term protection and maintenance of capital assets. For State and Private Forestry and Research, operational costs include program activity costs. They are variable costs.

2 Cost, Variable - A cost that varies with the level of controlled outputs in the time horizon covered by the planning period or decisions being considered. Variable costs include investment, operational, and variable general administration.

7 Cover - Vegetation used by wildlife for protection from predators, to ameliorate conditions of weather, or in which to reproduce. See Hiding Cover - Thermal Cover.

7 Cover/Forage, Cover-Forage Area Ratio - The ratio, in percent, of the amount of area in forage condition to that area in cover condition; the criteria by which potential deer and elk use of an area is judged.

12 Created Opening - An opening in the forest created as the result of even-aged silviculture through clearcutting, group selection, or shelterwood regeneration timber harvest systems.

1 Critical Habitat - That habitat designated by the Secretary, USDI, as critical to the continued survival of threatened or endangered species.

Critical Window - See Corridor.

7 Crop Tree - Any tree forming, or selected to form, part of the final crop; generally a tree selected in a young stand for that purpose.

7 Crown Closure - See Canopy Closure.

11 Crown Fire - A fire that runs through the tops of trees, scrub or brushwood.

1 Culmination of Mean Annual Increment (CMAI) - The age at which the annual increment of growth of a timber stand reaches its maximum.

2 Cultural Resources - Buildings, sites, areas, architecture, memorials, and objects having scientific, prehistoric, historic, or social values.

1 Cunit - One hundred cubic feet of wood chips.

1 Current Direction - The combination of activities dictated by laws, regulations, the Forest Service Manual, and existing unit plans.

DBH - See Diameter at Breast Height.

12 Deferred Forest Land - Productive forest land that has been administratively identified for study as possible addition to the National Wilderness Preservation System or otherwise withdrawn from timber utilization under authority granted in the Code of Federal Regulations (CFR).

2 Deferred Rotation System - A type of grazing management where the grazed area is divided into two or more pastures. One or more of the pastures are grazed for only part of the grazing season. The following season the period of use is rotated.

2 Demand Analysis - A study of factors affecting the schedule of demand for an output, including the price-quantity relationship if applicable.

2 Demand Schedule Curve - A schedule of quantities of an output that users are willing to take at a range of prices, at a given time, and conditions of sale.

1 Departure - Any timber harvest schedule which does not meet the definition of nondeclining evenflow.

12 Developed Recreation - Outdoor recreation requiring significant capital investment in facilities to handle a concentration of visitors on a relatively small area. Examples are ski areas, resorts and campgrounds.

18 Diameter at Breast Height (DBH) - The diameter of a tree 4.5 feet above average ground level, except that in National Forest practice it is measured from the highest ground level. Abbreviated dbh. The additional abbreviations, ob and ib are used to designate whether the diameter refers to the measurement outside or inside the bark.

2 Discount Rate, Nominal - Discount rate expressed in terms of current dollars, and thus affected by the rate of inflation.

2 Discount Rate, Real - A discount rate adjusted to exclude the effects of inflation.

12 Dispersed Recreation - Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are more for access and protection of the environment than for the comfort or convenience of the people.

3 Diversity - The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

1 Drop Camp - A camp where an outfitter furnishes transportation only. Clients provide all their own gear. Everything is packed in at the start of the trip and everything is packed out at the end of the trip.

1 Ecoclass - A classification system for identification and mapping of basic vegetative resources and their characteristics.

7 Ecosystem - An interacting natural system including all the component organisms together with the abiotic environment.

7 Edge Effect - The increased richness of flora and fauna resulting from the mixing of two communities where they join, as at the edge of a meadow.

2 Efficiency, Economic - The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value,

though use of benefit-cost ratios and rates-of-return may sometimes be appropriate.

1 Empirical Yield Table - A table showing, for one or more given species on a given site, the progressive development of a timber stand at periodic intervals covering the greater part of its useful life. This table is prepared on the basis of actual average stand conditions.

12 Endangered Species - Any species of animal or plant which is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of Interior as endangered in accordance with the 1973 Endangered Species Act, as amended.

12 Environment - The aggregate of physical, biological, economic, and social factors affecting all organisms in an area.

2 Environmental Analysis - An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions.

2 Environmental Assessment - A concise public document which provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact. It aids in compliance with the NEPA when no Environmental Impact Statement is needed.

5 Environmental Impact Statement - A document prepared by a Federal Agency in which anticipated environmental effects of a planned course of action or development are evaluated.

1 Essential Habitat - That habitat identified in forest planning as essential to the continued survival of threatened or endangered species; an interim classification of habitat prior to formal designation of critical habitat by the Secretary, USDI.

3 Even-age Management - The application of a combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Managed even-aged forests are characterized by a distribution of stands of varying ages (and therefore tree sizes) throughout the forest area. The difference in age between trees forming the main canopy level of a stand usually does not exceed 20% of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the time that the stand has reached the desired age or size for regeneration and is harvested. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

Evenflow - See Nondeclining Evenflow.

Existing Utility Corridor - See Corridor.

1 **FIL** - See **Fire Intensity Level**.

Final Removal - See **Overwood Removal**.

1 **Fire Risk** - Potential for a fire start, natural or human-caused.

1 **Fire Intensity Level** - Fire intensity level; a measure of heat released over time by the flaming front of a fire; indicated by flame length (i.e., FIL 1 = 0-2 ft; FIL 2 = 2-4 ft).

2 **Flood Hazard** - A general term meaning the danger to life or damage to property from overflows of a river or stream channel, extraordinary waves or tides occurring on lake, estuary, or ocean shores; flood flows in intermittent or normally dry streams; floods on tributary streams; floods caused by accumulated debris or ice in rivers; or other similar events.

2 **Floodplain** - The lowland and relatively flat areas joining inland and coastal waters (including debris cones and floodprone areas of offshore islands) including, at a minimum, that area subject to a 1% (100-year occurrence) or greater chance of flooding in any given year.

7 **Forb** - Any herbaceous plant species other than those in the Gramineae (grasses), Cyperaceae (sedges), and Juncaceae (rushes) families; fleshy-leaved plants.

3 **Forest Land** - Land at least ten percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use.

1 **FORPLAN** - A linear program computer model intended to display long and short-term resource interactions in forest management.

7 **Fuel Break** - A lane through forest or rangeland from which most combustible material, including trees and shrubs, has been removed or markedly reduced to prevent spread of fire.

1 **Fuel Hazard** - A supply of fuel that forms a special threat of ignition or suppression difficulty.

14 **Fuel Type** - An identifiable association of fuel elements of distinctive species, forms, sizes, arrangements or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

Full Corridor - (See **Corridor**).

3 **Goal** - A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal basis from which objectives are developed.

3 Goods and Services - The various outputs, including on-site uses, produced from forest and rangeland resources.

13 Ground Fuel - That fuel lying on or within six feet of mineral soil surface.

Group Selection - See Selection Cutting.

1 Guideline - An indication or outline of policy or conduct.

7 Habitat - The sum total of environmental conditions of a specific place occupied by a wildlife or plant species, or a population of such species.

7 Hard Snag - A snag composed primarily of sound wood, particularly sound sapwood; generally merchantable.

HCNRA - Hells Canyon National Recreation Area.

7 Herbicide - A chemical substance used for killing plants.

7 Hiding Cover - Vegetation capable of hiding 90 percent of a standing adult elk from the view of a human at a distance equal to or less than 61 meters (200 feet); generally, any vegetation used by elk for security or escape from danger.

2 Impact Analysis Area - The delineated area subject to significant economic and social impacts from Forest Service activities included in an economic or social impact analysis.

2 Impact Analysis Subarea - A specific area within an analysis area that is subject to localized economic or social impacts from Forest Service activities.

2 Impact, Economic, Direct - Impacts, caused directly by forest product harvest or processing, or forest uses.

2 Impact, Economic, Indirect - Impacts that arise from supporting industries selling goods or services to directly-affected industries.

2 Impact, Economic, Induced - Impacts resulting from employees or owners of directly or indirectly-affected industries spending their income within the economy.

1 Implementation Plan - Detailed action document that translates the selected land management alternative into on-the-ground instructions.

1 Implementation Schedule - The rate at which a management strategy is implemented.

5 Indicator Species - A plant or animal species so highly adapted to a particular kind of environment that its mere presence is sufficient indication that specific conditions are also present.

1 Individual Tree Selection - The selection of trees for harvest based on individual tree characteristics rather than on characteristics of trees as a group.

1 INTEGER - A computer model used to integrate Forest social and economic data.

3 Integrated Pest Management- A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resources values, alternative regulatory tactics and strategies, and benefit and cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.

5 Interdisciplinary Team (ID Team) - A group of individuals with differing training assembled to solve a problem or perform a task.

11 International Rule - In the measurement of lumber, a formula log rule allowing 1/2 inch taper for each 4 feet of length and 1/8 inch shrinkage for each one-inch board.

Intolerant - See Tolerance.

1 K-V - (Knutson-Vandenberg Act) An act of Congress which among other things authorizes the Forest Service to use funds collected from timber sales for tree planting, timber stand improvement and other forest uses.

13 Ladder Fuels - Those fuels which tend to be continuous between the ground fuels and tree crowns, forming a "ladder" by which fire may spread into the tree crowns.

1 Landing - A site where logs, harvested during a timber sale, are stored prior to removal from the Forest.

1 Land Management Planning - The process of organizing the development and use of lands and their resources in a manner that will best meet the needs of people over time, while maintaining flexibility for a combination of resources for the future.

7 Land-type - Particular combinations of land features and plant community types used to predict responses to timber management practices.

7 Life Form - A group of wildlife species whose requirements for habitat are satisfied by similar successional stages within given plant communities.

2 Lifestyle - The characteristic way people live, indicated by consumption patterns, work, leisure, and other activities.

5 Linear Program - A mathematical method used to determine the most effective allocation of limited resources between competing demands when both the objective and the restrictions on its attainment can be expressed as a system of linear equalities or inequalities.

2 Locatable Minerals - In general, the locatable minerals are those hardrock minerals which are mined and processed for the recovery of metals. They also may include certain nonmetallic minerals and uncommon varieties of mineral materials, such as valuable and distinctive deposits of limestone or silica.

5 Lode Mining - The mining of a valuable mineral which occurs as a tabular deposit between definite, contrasting mineral or rock boundaries.

1 Long-Reach Cable System - In timber harvesting, any cable logging system capable of extracting logs at distances greater than 2,000 feet.

3 Long-Term Sustained Yield Timber Capacity - The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple-use objectives.

2 Low Income - Household income below the poverty level as defined by the U. S. Department of Health and Human Services.

1 Management Area - The land area on which a certain management strategy is applied.

3 Management Concern - An issue, problem or a condition which constrains the range of management practices identified by the Forest Service in the planning process.

3 Management Direction - A statement that includes: multiple use and other goals and objectives, the associated management strategies, and standards and guidelines for attaining them.

3 Management Intensity - A management practice or combination of management practices and associated costs designed to obtain different levels of goods and services.

3 Management Practice - A specific action, measure, course of action, or treatment.

3 Management Strategy - Management practices and intensity selected and scheduled for application on a management area to attain multiple use and other goals and objectives.

1 Management Prescription - See Management Strategy.

2 Market - The processes of exchanging goods or service for money or other goods or services according to a customary procedure. A market may occur in a specific place or throughout an area by individual transactions.

2 Market Area - The area from which a market draws or to which it distributes its goods or services, and for which the same general price structure and price influences prevail.

2 Market Assessment - A market study describing sources of supply and demands for goods or service, pricing processes, and influences on value.

Maximum Modification (Visual) - See Visual Quality Objective.

MBF - Thousand board feet.

MCF - Thousand cubic feet.

MIH - Management Information Handbook

2 Minority - Persons as specified in Directive 15, Office of Federal Statistical Policy and Standards, U. S. Department of Commerce, Statistical Policy Handbook (1978). Generally identified as one of the following four categories: Alaskan Native or American Indian, Asian or Pacific Islander, Black, Hispanic.

11 Mistletoe - A flowering plant of the family Loranthaceae, parasitic on trees and other woody plants.

10 Mitigate - To make less severe.

MMBF - Million board feet.

MMCF - Million cubic feet.

MBF - Thousand board feet.

Modification (Visual) - See Visual Quality Objective.

3 Multiple Use - The management of all the various renewable surface resources of the National Forest System in such a way that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.
(16 U.S.C. 531(a))

NEPA - The National Environmental Policy Act of 1969.

1 NEPA Process - A process, mandated by NEPA, which concentrates decisionmaking around issues, concerns, alternatives and the effects of alternatives on the environment.

New Utility Corridor - See Corridor.

NFMA - The National Forest Management Act of 1976.

2 Nominal Dollars - A value from which the effect of change in the purchasing power of the dollar has not been removed.

1 Nonchargeable - Volumes of timber that are not included in calculations of a regulated sale schedule and therefore cannot be included when determining achievement of that timber sale schedule.

1 Nondeclining Evenflow - A harvest schedule for timber or any other resource in which the average annual harvest may increase or remain static through time but never decrease.

3 Objective - A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

1 Off-Road Vehicle (ORV) - A vehicle capable of cross-country travel or travel on low-grade roads and trails, e.g., motor bikes, four wheel drives, snowmobiles. Includes all terrain vehicles (ATV's).

12 Old-Growth - An old-growth stand is defined as any stand of trees ten acres or greater generally containing the following characteristics: 1) stands contain mature and overmature trees in the overstory and are well into the mature growth stage; 2) stands will usually contain a multi-layered canopy and trees of several age classes; 3) standing dead trees and down material are present; and 4) evidence of man's activities may be present, but do not significantly alter the other characteristics and would be a subordinate factor in a description of such a stand.

1 Opportunity Cost - The dollar-quantifiable net loss resulting from selecting a less efficient course of action.

Optimum Big-Game Cover - See Optimum Habitat.

7 Optimum Habitat - Amounts and arrangement of cover and forage areas that result in the greatest possible proper use of the greatest possible area by deer and elk.

ORV - See Off-Road Vehicle.

2 Output, Controlled - The amount of an output which management has the legal and practical ability to control with management activities.

2 Output, Non-Controlled - The amount of an output which will occur regardless of management activity.

1 Overstory - The portion of trees in a forest which forms the uppermost layer of foliage.

7 Overwood Removal (Final Harvest) - Removal of all seed bearers, or shelter trees, after regeneration is considered to be established under a shelterwood system.

2 PAOT - Persons at one time. The number of people in an area or using a facility at the same time.

1 P&M - Funds appropriated by Congress for protection and management of the Forest.

Partial Retention (Visual) - See Visual Quality Objective.

2 Payment in Lieu of Taxes (PILOT) - Payments to local or State governments based on ownership of Federal land and not directly dependent on production of outputs or receipt sharing. Specifically, they include payments made under the Payments in Lieu of Taxes Act of 1976 by U. S. Department of the Interior.

2 Perennial Streams - These are waters that flow throughout the year from source to mouth. They receive water not only from precipitation, but also from underground sources at springs and seeps. They owe their permanency to the ground water in the area adjoining the stream being at higher elevation than the stream bed.

1 Permittee - A holder of a permit to use National Forest land for a specific purpose.

PILOT - See Payment in Lieu of Taxes.

11 Pioneer Species - A plant capable of invading bare sites (e.g., a newly exposed soil surface) and persisting there, i.e., "colonizing" them, until supplanted.

5 Placer Mining - The extraction of valuable heavy minerals from a mass of sand, gravel, or other similar alluvial material by concentration in running water.

2 Planned Ignition - A fire started by a deliberate management action.

PNV - See Present Net Value.

PNW - Present Net Worth, see Present Net Value. Occasionally used to refer to FORPLAN efficiency criterion which does not include all quantified costs and benefits.

1 Policy - A guiding principle upon which is based a specific decision or set of decisions.

1 Potential Yield - The sustainable output level of wood fiber available after deductions for other resource needs.

1 Preattack Planning - In fire management, a system for collecting, evaluating, and recording fire intelligence data for a given planning unit. The planning phase is usually followed by a construction and development program integrated with other management functions.

7 Precommercial Thinning - Any type of thinning that takes place in a stand of trees before the size or condition of the material cut or killed makes it of sufficient value to meet the costs of the activity.

5 Prescribed Fire - Intentional application of fire to forest or rangeland in their natural or modified state to meet specific management objectives.

7 Prescription (Silvicultural) - The formal written plan of action to carry out a silvicultural treatment of a forest stand to achieve specific objectives.

1 Present Net Value - Discounted benefits less discounted costs.

Preservation (Visual) - See Visual Quality Objective.

2 Primitive - See Recreation Opportunity Spectrum.

Productive - See Commercial Forest Land.

1 PROGNOSIS - A computer model which predicts how timber stands will grow by comparing growth of trees within stands to be managed with the measured growth of trees within stands having similar characteristics.

1 Programmed Harvest - Timber scheduled for harvest for a specific year.

3 Public Issue - A subject or question of widespread public interest relating to management of the National Forest System.

12 Purchaser Road Credits - Credit earned by the purchaser of a National Forest timber sale by construction of contract-specific roads. Earned purchaser credit may be used by the purchaser as payment for National Forest timber removed.

10 Pyroclastic - Formed by fragmentation as a result of volcanic or igneous action.

18 Range Condition - The current productivity of a range relative to what that range is naturally capable of producing.

1 Range Condition, Satisfactory - Having achieved the desired ecological status.

1 RARE II - An acronym for a second generation "Roadless Area Review and Evaluation" instituted in June 1977, to identify roadless and undeveloped land areas in the National Forest System. Its purpose was to determine which of the inventoried areas should be recommended to Congress for inclusion in the National Wilderness Preservation System, which areas should be managed for nonwilderness uses, and which areas required further planning before a reasonable decision on them could be made.

1 Rate-of-Return - the annualized net profit on an investment, expressed as a percentage.

3 Real Dollar Value - A monetary value which compensates for the effects of inflation.

2 Recreation Opportunity Spectrum (ROS) - An array of recreational activities, settings, and experiences used as a basic framework in planning and managing the recreation resource. This spectrum is divided into the following classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban.

> 2 Primitive - Area is characterized by essentially unmodified natural environment of a size or location that provides the opportunity for isolation from sights and sounds of people. The user has the opportunity to be a part of the natural environment, often with a high degree of challenge and risk in which to use a maximum degree of outdoor skills. The area is managed to be as free as possible from evidence of people-induced restrictions and controls. Only essential facilities for resource protection are used. Motorized use within the area is normally not permitted.
>
> 2 Semiprimitive Nonmotorized - Area is characterized by predominantly unmodified natural environment of a size or location that provides a good-to-moderate opportunity for isolation from sights and sounds of people. The user has the opportunity for a high degree of interaction with the natural environment. The area is managed in such a way that minimum on-site controls and restrictions may be present. Facilities are primarily provided for the protection of resource values and safety of users. Motorized use is not normally permitted.
>
> 2 Semiprimitive Motorized - Area is characterized by predominantly unmodified natural environment of a size or location that provides a good-to-moderate opportunity for isolation from sights and sounds of people except for facilities essential for the use of motorized equipment. The area is managed

in such a way that minimum on-site controls and restrictions may be present, but are subtle. Facilities are primarily provided for the protection of resource values and safety of users. Motorized use is permitted. Limited primitive road construction to enhance recreation opportunity is permissible.

2 Roaded Natural - Area is characterized by predominantly natural appearing environments with moderate evidences of the sights and sounds of people. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

2 Rural - Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.

2 Urban - Area is characterized by a substantially urbanized environment, although the background may have natural appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans, on-site, are predominant. Large numbers of users can be expected, both onsite and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

2 Recreation Visitor Day - The use of an area by one or more people for 12 person-hours, either continuously or spread over several visits. One person visiting a recreation site for one day (12 hours) is one recreation visitor day (RVD).

Recreational Rivers - (See Wild, Scenic and Recreational Rivers).

1 Redd - Nest in gravel of stream bottom where fish deposit eggs. In this document, refers to salmon spawning redds.

2 Reforestation - Reforestation includes measures to obtain natural regeneration, as well as tree planting and seeding. The work is done on National Forests to produce timber and other forest products, protect watersheds, prevent erosion, and improve other

social and economic values of the forests, such as wildlife, recreation, and natural beauty.

11 Regeneration - The renewal of a tree crop, whether by natural or artificial means. Also the young tree crop itself.

1 Regulated - Stands which contribute to the calculated base timber sale schedule or departure. Herein includes green volume projections of FORPLAN and the estimated capture of future endemic mortality.

1 Regulated Forest - The regulation of the growing stock and/or yield so that it contains at all times a proper proportion of young, middle-aged and mature timber and has for its primary objective the establishment of a forest property capable of continuous production or sustained yield.

1 Rehabilitation - The act of restoring a portion of land to its former state or capacity. This can be done by reshaping the land and/or planting grass, forbs, shrubs, or trees. Landscape rehabilitation is a short-term management alternative used to restore landscapes containing undesirable visual or resource damage to a desired quality. Rehabilitation may be achieved through alteration, concealment, or removal or obtrusive elements.

2 Research Natural Area - An area, typifying an important forest, shrubland, grassland, alpine, aquatic, or geologic type or other natural situation that has special or unique characteristics, which is set aside to provide a benchmark for education and research.

12 Reserved Forest Land - Productive public forest land withdrawn from timber utilization through statute or administrative regulations.

1 Resource Allocation - Designating certain parcels of land for the production of certain resources. The resources derived may be commodities, amenities or combinations of each. For the purpose of this document, resource allocation is synonymous with land management allocation.

2 Rest Rotation System - A type of grazing management where the grazed area is divided into two or more pastures. One or more pastures are not grazed (rested) during certain years or entire growing seasons.

Retention (Visual) - See Visual Quality Objective.

2 Riparian Areas - Geographically-delineated areas, with distinctive resource values and characteristics, that are comprised of the aquatic and riparian ecosystems, floodplains and wetlands. Generally these are within 100 feet of water.

2 Riparian Ecosystems - A riparian ecosystem is a transition between the aquatic ecosystem and the adjacent terrestrial ecosystem and is identified by soil characteristics and distinctive vegetation communities that require free or unbound water.

2 Riparian Habitat - That portion of a watershed or shoreline influenced by surface or subsurface waters, including stream or lake margins, marshes, drainage courses, springs and seeps.

Risk - See Fire Risk.

RNA - See Research Natural Area.

Roaded Natural - See Recreation Opportunity Spectrum.

17 Roads, Arterial - Roads and trails comprising the basic access network for National Forest System administrative and management activities. These roads and trails serve all resource elements to a substantial extent, and maintenance is not normally determined by the activities of any one element. They provide service to large land areas and usually connect with public highways or other National Forest arterial roads to form an integrated network of primary travel routes. Locations and standards are determined often by a demand for maximum mobility and travel efficiency rather than by a specific resource management service. Usually, they are developed and operated for long-term land and resource management purposes and constant service.

17 Roads, Collector - Roads and trails constructed to serve the activities of two or more elements but which do not fit into the other two categories (arterial or service). Construction costs of these facilities are prorated to the respective element served. These roads serve smaller land areas and are usually connected to a National Forest arterial or public highway. They collect traffic from National Forest local roads or terminal facilities. Locations and standards are influenced by both long-term multiresource service needs and travel efficiency. Collector roads may be operated for either constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

17 Roads, Local - Roads and trails constructed and maintained for the activities of a given resource element. Some use may be made by other element activities, but normally maintenance is not affected by such use. These roads connect terminal facilities with National Forest collector or arterial roads or public highways. Locations and standards usually are determined by the requirements of a specific resource activity rather than by travel efficiency. National Forest local roads may be developed and operated for either long- or short-term service.

1 Roads, Open - Roads open to motorized use during all or most of the year.

5 Rotation (as used in reference to timber) - The period of years between the initial establishment of a timber stand and the time when it is considered ready for cutting and regeneration.

RPA - The Forest and Rangeland Renewable Resources Planning Act of 1974.

Rural - See Recreation Opportunity Spectrum.

1 Sale Schedule - The quantity of timber planned for sale by time period from an area of suitable land covered by a forest plan. The first period, usually a decade, of the selected sale schedule provides the allowable sale quantity. Future periods are shown to establish that long-term sustained yield will be achieved and maintained.

1 Salvage - Removal of recently-dead trees.

11 Sanitation - The removal of dead, damaged, or susceptible trees essentially to prevent the spread of pests or pathogens and so promote forest hygiene.

1 Scablands - Shallow-soiled lands typically dominated by such species as low and stiff sagebrush.

Scenic Rivers - See Wild, Scenic and Recreational Rivers.

1 Scoping Process - A process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

11 Scribner Rule - In the measurement of timber and lumber, a diagram log rule, one of the oldest in existence. It assumes 1-inch boards and a 1/4-inch kerf (width of saw), makes a liberal allowance for slabs and disregards taper. It is the official rule in many parts of the United States for measuring timber volume.

11 Scribner Decimal C Rule - The Scribner rule modified by rounding off the last digit to the nearest 10 and dropping the zero. An official rule of the U. S. Forest Service.

2 Season-Long Grazing - A type of grazing management in which the total area is subject to use throughout the grazing season.

11 Seed Tree - A tree selected, and often reserved for seed collection.

1 Selected Parent Tree - A tree picked as a superior seed source.

11 Selection Cutting - The annual or periodic removal of trees, individually or in small groups, from an uneven-aged forest in order to realize yield and establish a new stand of irregular constitution.

Semiprimitive Motorized - See Recreation Opportunity Spectrum.

Semiprimitive Normotorized - See Recreation Opportunity Spectrum.

2 Sensitive Species - Those species which have appeared in the Federal Register as proposals for classification and are under consideration for official listing as endangered or threatened species, are on an official State list, or are recognized by the Regional Forester to need special management in order to prevent the need for their placement on Federal or State lists.

5 Seral - A biotic community which is a developmental, transitory stage in an ecologic succession.

Shade Tolerant Trees - See Tolerance.

Shade Intolerant Trees - See Tolerance.

5 Shelterwood System - In timber management, even-aged silvicultural systems in which (in order to provide a source of seed and/or protection of regeneration) the old tree crop is removed in two or more successive "shelterwood cuttings" the first of which is ordinarily the seed tree cutting and the last is the final cutting; any intervening cuttings being termed removal cuttings.

1 Short-Reach Cable System - In timber harvesting, any cable logging system capable of extracting logs only from distances of up to 2,000 feet.

5 Silviculture - The theory and practice of controlling the establishment, composition, competition, and growth of forests.

3 Silvicultural System - A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the fellings that remove the mature crop and provide for regeneration, and according to the type of forest thereby produced.

5 Skidding - In timber harvesting, a loosely-used term for transportation of logs from stumps to a collecting point by sliding or dragging along the ground.

7 Slash - The vegetative residue left on the ground after trees are felled or accumulated as a result of storm, fire, or silvicultural treatment.

1 Smolt - Young salmon or steelhead which migrate to the ocean.

1 Smolt Habitat Capability Index - An indicator of the quality of rearing habitat for young salmon or steelhead (smolt). It assumes that spawning gravels are adequate to provide sufficient spawning areas to fully seed the existing rearing habitat and that sufficient numbers of adults will escape past fishermen, hydroelectric dams, or natural mortality to return and fully seed the spawning

gravels. It is expressed as the number of smolt which could be produced, estimating potential rather than actual production.

5 Snag - A standing dead tree from which the leaves and most of the branches have fallen.

2 Social Organization - The structure of a society described in terms of institutions, community cohesion and community stability.

2 Social Variable - A variable that measures the social impact of Forest Service management alternatives. Examples include population statistics, types of institutions, and personal opinion as reflected in attitudes or as demonstrated by behavior.

1 Spike Camp - A hunting camp that is set up in advance of the client's arrival. This camp may be left up for the duration of the hunting season. The camp may or may not be used by the outfitter. The specific location is described in the permit. Also refers to an isolated fire camp, away from the primary fire camp.

1 Standard - A principle requiring a specific level of attainment, a rule against which to measure.

1 Stat High Bid (Statistical High Bid) - The successful bid for Forest stumpage.

1 Steelhead - A large-sized silvery anadromous trout.

1 Stockable - Capable of being occupied by trees.

1 Stocking Level Controls - As used in timber management, control of the number of trees for a given area in order to use the sunlight, water and soil nutrients for maximum wood growth.

2 Streamside Management Unit - A streamside management unit (SMU) is the stream and an adjacent area of varying width where practices that might affect water quality, fish and other aquatic resources are modified, as necessary, to meet water quality goals for each class of stream.

7 Stringer - Vegetation arranged in a long, thin, linear fashion.

1 Stumpage - Standing timber.

7 Successional Stage - A stage or recognizable condition of a plant community which occurs during its development from bare ground to climax. Coniferous forests in the Blue Mountains progress through six recognized states: grass-forb, shrub-seedling, pole-sapling, young, mature, and old-growth.

3 Suitability - The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and

the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

Suitable - See Commercial Forest Land.

1 Summer Range - A portion of the total range on which big-game animals normally find food and cover during summer months.

2 Supply - The amount of an output that producers are willing to provide at a specific price, time period, and conditions of sale.

1 Suppression - Action to limit the spread, and to prevent damage, by a wildfire.

1 Surveillance - To observe wildfires without taking active suppression action.

3 Sustained Yield of Products and Services - The achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the National Forest System without impairment of the productivity of the land.

1 Swale - A low-lying stretch of land.

1 Targets - Pacific Northwest Regional RPA output and activity levels which are assigned to the 19 Forests in the Region.

7 Thermal Cover - Cover used by animals to ameliorate effects of weather; for elk, a stand of coniferous trees 12 meters (40 feet) or more tall with an average crown closure of 70% or more; for deer, cover may include saplings, shrubs, or trees at least 1.5 meters (5 feet) tall with 75% crown closure.

2 Threatened Species - Any species listed in the Federal Register, which is likely to become an endangered species within the forseeable future throughout all or a significant portion of its range.

11 Thinning - A felling made in an immature tree crop or stand in order primarily to accelerate diameter increment but also, by suitable selection, to improve the average form of the trees that remain, without--at least according to classical concepts--permanently breaking the canopy.

3 Timber Production - The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. For purposes of this definition, the term "timber production" does not include production of fuelwood.

1 Timber Stand Improvement - Practices such as thinning or planting which are intended to assist in meeting management objectives.

16 Tolerance - The forestry term for expressing the relative capacity of a tree to compete under low light and high root competition.

Tolerant Trees - Trees which reproduce and form understories beneath canopies of less tolerant trees or even beneath shade of their own species.

Intolerant Trees - Trees which reproduce successfully only in the open or where the canopy is greatly broken.

15 Total Resource Information System (TRI) - A natural resource data base used on National Forests in the Pacific Northwest (Washington and Oregon) to provide storage and retrieval for in-place resource data. TRI system is a multimedia information system using maps, aerial photographs, paper forms, microfilm and computer storage to handle large volumes of data.

5 Tractor Logging - In timber harvesting, any logging method which uses a tractor as the motive power for transporting logs from the stumps to a collecting point, whether by dragging or carrying the logs.

1 Transition Forage - Forage from transitory range.

5 Transitory Range - Land that is suitable for grazing use of a non-enduring or temporary nature over a period of time. For example, on particular disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage.

Transportation Corridor - See Corridor.

TRI - Total Resource Information System.

15 TRI Compartment - An orthophoto map area for indexing and storing data locations. The scale is 4" = 1 mile, and covers approximately 6500-8000 acres, with boundaries on photo-identifiable features. Each compartment has a unique name and number used for information storage on the orthophoto maps and in the USDA Fort Collins Computer Center.

1 Tri-Counties - Baker, Union and Wallowa Counties of Oregon -- the primary impact area of the Wallowa-Whitman National Forest.

TSI - Timber Stand Improvement, as in precommercial thinning.

7 Understory - In silviculture, trees growing under the canopy formed by taller trees; in range management, herbaceous and shrub vegetation under a brushwood or tree canopy.

1 Undeveloped Area - Lands which are in an essentially unroaded condition.

3 Uneven-age Management - The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest

products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection.

7 Ungulate - A mammal with hooves.

2 Unplanned Ignition - A fire started at random by either natural or human causes, or a deliberate incendiary fire.

Unproductive - As used in reference to timber production, forest land which does not grow 20 cubic feet per acre per year of merchantable timber.

1 Unregulated - Timber which was not considered (because of land allocations or condition of trees) in calculating a base sale schedule or departure. Unregulated timber includes salvage of epidemic mortality, volumes of cull material, or green volumes from unsuited lands.

2 Urban - See Recreation Opportunity Spectrum.

USDA - United States Department of Agriculture.

USDI - United Stated Department of the Interior.

Utility Corridor - See Corridor.

2 Value, Market - The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

2 Value, Non-Market - The unit price of a non-market output not normally exchanged in a market at any stage before consumption, and thus must be imputed from other economic information.

19 Viewshed - A total landscape seen or potentially seen from all or a logical part of a travel route, use area or water body.

VIS - See Visitor Information Service.

1 Visitor Information Service - Self-explanatory.

1 Visual Corridor - A linear area identified for special attention to visual quality.

1 Visual Quality Objective - A combination of inherent scenic quality and public interest which defines the acceptable degree of alteration for any given area. Five visual quality objectives have been identified as follows:

9 Preservation - Only ecological changes are permitted.

9 Retention - Management activities are not visually evident.

9 Partial Retention - Management activities may be evident, but remain visually subordinate.

9 Modification - Management activities in foreground and middleground are dominant but appear natural.

9 Maximum Modification - Management activities are dominant, but appear natural when seen as background.

2 Wetlands - Those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats and natural ponds.

8 Wild, Scenic and Recreational Rivers - Rivers or river segments which have been designated as part of the National Wild and Scenic Rivers System (Public Law 90-542, 1968). Brief summaries of criteria for classification within this system are as follows:

8 Wild Rivers - Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

8 Scenic Rivers - Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

8 Recreational Rivers - Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

7 Wilderness - Lands designated by law as wilderness; no road building or timber harvesting is allowed on such lands; they are intentionally managed to maintain their primitive character.

Wilderness Act - The Wilderness Act of 1964.

2 Wilderness Recreation Opportunity Spectrum - A further refinement of the primitive portion of the ROS. The following terms deal only with officially designated wilderness:

Primitive Trailed - The sights, sounds, and smells relating to human activities outside the wilderness are essentially non-existent. The same factors relating to human activities

best copy available

within the wilderness are minimized. An extremely high opportunity exists for exploring and experiencing considerable isolation, tranquility and self-reliance.

Primitive Trailless - The most remote; generally the core area which is least accessible. Terrain, vegetation, trail density, and reasonable travel methods provide an area generally large enough to allow at least two days of cross-country travel without crossing a constructed trail. A most outstanding opportunity exists for isolation and solitude free from evidence of past human activity.

Semiprimitive Trailed - The least remote; generally those areas nearest trailheads and major access points or the wilderness periphery where the sights, smells, and sounds of human activities both within and outside the wilderness are affecting the wilderness visitor. Opportunities for a wilderness-related experience are only moderate.

2 Wildfire - Any wildland fire that requires a suppression response.

Wild Rivers - See Wild, Scenic and Recreational River.

7 Winter Range - A range, usually at lower elevation, used by migratory deer and elk during the winter months; usually smaller and better-defined than summer ranges.

1 Wolf Plant- A plant species generally considered to be palatable, but which is not grazed. Absence of grazing allows the plant to evolve into a relatively large, coarse form intermixed with dead previous year's growth. Extensive root development allows the plant to successfully exclude competition from younger plants. The resulting coarse growth is less palatable and produces less forage growth than identical species exposed to periodic grazing.

1 Working Group - A grouping of community types or forest types indicative of timber productivity.

WROS - See Wilderness Recreation Opportunity Spectrum.

Key to Source Codes

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Chapter IX

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